

Name _____ Score _____

Calculus Warm-up # 11-A

USE YOUR TI-89 TODAY! Round to 3 decimal places

1) $\log_4 64 =$ _____

2) $\log_7 252 =$ _____

3) Find x if $\log_3 x = 5$. _____

4) Find x if $\log_4 (2x - 1) = 7$ _____

5) Find x if $2^{3x} = e^5$. _____

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Calculus Warm-up # 11-B

NO CALCULATORS TODAY!

6) Find x if $\log_2 8 = x$ _____

7) Find x if $4^{3x} = 2^{x^2+8}$ _____

8) Find x if $\log_3 x = 2$ _____

9) Find x if $\log_4(2x-3) = 2$ _____

10) True or False: The slope of the curve $y = \ln x$ is always positive. _____

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Calculus Warm-up # 11-C

NO CALCULATORS TODAY!

11) Find $\frac{dy}{dx}$ if $y = \ln 5x$ _____

12) Find $\frac{dy}{dx}$ if $y = \log_3 15x$ _____

13) Find $\frac{dy}{dx}$ if $y = \log_4(2x+3)$ _____

14) Find $\frac{dy}{dx}$ if $y = \ln \frac{x^2 - 3}{x + 4}$ _____

15) Find the domain of $f^{-1}(x)$ if $f(x) = \ln x + 2$ _____

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Calculus Warm-up # 11-D

NO CALCULATORS TODAY!

16) Find $\frac{dy}{dx}$ if $y = \ln(8x^2)$ _____

17) Find $\frac{dy}{dx}$ if $y = \sin(2x)$ _____

18) Find $\frac{dy}{dx}$ if $y = e^{\sin(2x)}$ _____

19) Find $\frac{dy}{dx}$ if $y = \ln e^{\sin 2x}$ _____

20) What is the domain of $g^{-1}(x)$ if $g(x) = \ln(x-2)$? _____

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Calculus Warm-up # 12-A
NO CALCULATORS TODAY!

- 1) Find $f'(3)$ if $f(x) = \frac{1}{x}$ _____
- 2) Find $f'(\pi)$ if $f(x) = \sin x$ _____
- 3) Find $f'(0)$ if $f(x) = e^{5x}$ _____
- 4) Find $\lim_{x \rightarrow 2} \frac{x-2}{x^2+x-6}$ _____
- 5) Write the equation of the tangent line to the curve $y = 5x^2 - 2x$ at $x = -1$

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Calculus Warm-up # 12-B
NO CALCULATORS TODAY!

- 6) Find $f'(x)$ if $f(x) = x^2 \cos x$ _____
- 7) Find $f'(x)$ if $f(x) = \frac{x+1}{x-2}$ _____
- 8) Find $f'(x)$ if $f(x) = (3x^2 - 1)^5$

- 9) Find $\lim_{x \rightarrow 0} \frac{\sin x}{x}$ _____
- 10) Write the equation of the tangent line to the curve $y = 3x^5 - x^3$ at $x = -1$

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Calculus Warm-up # 12-C
Use your TI-89 TODAY! Round to 3 decimal places

- 11) Find $\lim_{x \rightarrow 2^+} \frac{x+2}{x^2-4}$ _____
- 12) Find $\lim_{x \rightarrow \infty} \frac{x+2}{x^2-4}$ _____
- 13) Find $f'(2)$ if $f(x) = e^{x^2}$ _____
- 14) Find $f'(\pi)$ if $f(x) = \sin(2x^3)$ _____
- 15) $\lim_{h \rightarrow 0} \frac{\tan(x+h) - \tan x}{h} =$ _____

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Calculus Warm-up # 12-D
NO CALCULATORS TODAY!

- 16) Find $f'(2)$ if $f(x) = \ln x$ _____
- 17) Find $f'(\pi/2)$ if $f(x) = 3 \sin 2x$ _____
- 18) Find $\lim_{x \rightarrow 0} \frac{2 - \sqrt{x+4}}{x}$ _____
- 19) $\lim_{x \rightarrow \infty} \frac{3x^4 - 6x + 1}{5x^4 + 4}$ _____
- 20) $\lim_{x \rightarrow 2} \frac{x^4 - 2^4}{x - 2}$ _____

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Calculus Warm-up # 13-A
NO CALCULATORS TODAY!

- 1) If $y = (6x^2 - 9)^4$, find $\frac{dy}{dx}$ _____
- 2) For what value of x is the function $f(x) = \frac{7}{(x-3)^5}$ undefined? _____
- 3) If $f(x) = \frac{7}{(x-3)^5}$, find $f'(x)$ _____
- 4) If $y = (\sin x)^6$, find $\frac{dy}{dx}$ _____
- 5) If $y = \sin 6x$, find $\frac{dy}{dx}$ _____

Name _____ Score _____

Calculus Warm-up # 13-B
NO CALCULATORS TODAY!

- 6) Find y' if $y = 4(2x^3 - 1)^3$ _____
- 7) Find y' if $y = \cos(7x^2)$ _____
- 8) Find y' if $y = (\cos 7x)^2$ _____
- 9) Find y' if $y = \tan 3x$ _____
- 10) Find a possible formula for $f(x)$ if $f'(x) = \sec^2 x$ _____

Name _____ Score _____

Calculus Warm-up # 13-C

Answer True or False based on the graph below.

- 11) $f(x)$ is continuous at $x = g$. _____
- 12) $f'(a) > 0$ _____
- 13) $f(x)$ is differentiable at $x = d$ _____
- 14) $f(x)$ is differentiable at $x = g$ _____
- 15) $f'(c) > f(h)$ _____

Name _____ Score _____

Calculus Warm-up # 13-D
NO CALCULATORS TODAY!

- 16) Find $\frac{dy}{dx}$ if $y = e^{\sin 2x}$ _____
- 17) Find $\frac{dy}{dx}$ if $y = \sec(4x - x^2)$ _____
- 18) Find $\frac{dy}{dx}$ if $y = \sec 4x - x^2$ _____
- 19) If $f'(x) = \cos x$, find a possible formula for $f(x)$. _____
- 20) For what value of x does the curve $y = 3x^2 - 7x$ have a horizontal tangent line? _____

Name _____ Score _____

Calculus Warm-up # 14-A
NO CALCULATORS TODAY!

1) If $y = e^{6x^3}$, find $\frac{dy}{dx}$ _____

2) Is $f(9)$ undefined if $f(x) = \sqrt{x-9}$? _____

3) Is $f'(9)$ undefined if $f(x) = \sqrt{x-9}$? _____

4) If $y = \sqrt{2x^5 - 1}$, find $\frac{dy}{dx}$ _____

5) If $y = \frac{2}{(x+1)^3}$, find $\frac{dy}{dx}$ _____

Name _____ Score _____

Calculus Warm-up # 14-B
NO CALCULATORS TODAY!

6) Find y' if $y = x^2 \tan x$ _____

7) Multiple Choice: $\lim_{x \rightarrow 0} \frac{\cos x}{x}$ _____
a) 1 b) 0 c) -1 d) dne

8) Multiple Choice: $\lim_{x \rightarrow 0} \tan x$ _____
a) 1 b) 0 c) $\frac{\pi}{2}$ d) dne

9) $\lim_{x \rightarrow \infty} \frac{3x^2 - 2x}{5x^2 + 3}$ _____

10) Find the slope of the tangent line to the circle $x^2 + y^2 = 25$ at the point (3, 4) _____

Name _____ Score _____

Calculus Warm-up # 14-C

Use the graphs to find the value of each.

11) a _____

12) b _____

13) c _____

14) d _____

15) g _____

Name _____ Score _____

Calculus Warm-up # 14-D
NO CALCULATORS TODAY!

16) Find the x-intercepts of the function $y = 2x^4 - 32x^2$ _____

17) If $f(x) = \sqrt{x}$, does $f(x)$ ever have a horizontal tangent? _____

18) If $y^3 - 2y = 7x^2 + 4$, find $\frac{dy}{dx}$ _____

19) Find $\frac{dy}{dx}$ if $y = \sin(x+2)$ _____

20) Which function has a constant 2nd derivative?
a) $y = e^x$ b) $y = 3x^2 - 4x + 9$
c) $y = \ln x$ d) $y = x^3 - 1$ _____

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Calculus Warm-up # 15-A
NO CALCULATORS TODAY!

1) $\lim_{x \rightarrow \infty} \frac{3x^2 - 2x^5}{5x^5 + 3}$ _____

2) If $y = e^{\sin 2x}$, find dy/dx _____

3) $\int_1^3 x^2 + 3 dx$ _____

4) $\cos(2\pi/3) =$ _____

5) Find the slope of the curve $y = \frac{1}{x}$ where $x = 5$. _____

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Calculus Warm-up # 15-B
NO CALCULATORS TODAY!

6) $\lim_{x \rightarrow 4} \frac{x^2 - 4x}{x^2 - 3x - 4}$ _____

7) If $y = 7^{2x}$, find dy/dx _____

8) $\int_1^3 \frac{1}{x^2} dx$ _____

9) $\arcsin(-1/2)$ _____

10) If $V = \frac{4}{3}\pi r^3$, find dV/dt _____

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Calculus Warm-up # 15-C
NO CALCULATORS TODAY!

11) $\lim_{x \rightarrow 3^+} \frac{1}{\sqrt{x-3}}$ _____

12) If $y = (x^2 + 7)^5$, find dy/dx _____

13) $\int \frac{x^2}{x^3 - 1} dx$ _____

14) $\csc(3\pi/4)$ _____

15) On what intervals is $f(x) = x^3 - 3x + 5$ increasing? _____

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Calculus Warm-up # 15-D
NO CALCULATORS TODAY!

16) $\lim_{x \rightarrow 4^-} \frac{x+1}{x-4}$ _____

17) If $y = \ln(5x^4)$, find dy/dx _____

18) $\int_{-2}^2 \sqrt{4-x^2} dx$ Hint: Use geometry! _____

19) $\arctan(-1)$ _____

20) True or False: If $f(x)$ has a relative maximum at $x = p$, then $f'(p) = 0$. _____

Name _____ Score _____

Calculus Warm-up # 16-A

Answer True or False based on the graph below.

- 1) $f(x)$ has a relative maximum at b . _____
- 2) $f(x)$ has an absolute maximum at b . _____
- 3) If $a < r < b$, then $f(r) < f(b)$ _____
- 4) $f'(c) > 0$ _____
- 5) $\lim_{x \rightarrow c} f(x)$ does not exist. _____

Name _____ Score _____

Calculus Warm-up # 16-B

NO CALCULATORS TODAY!

- 6) If $A = \pi r^2$, find dA/dt _____
- 7) True or False: $x^{3/5} = (\sqrt[3]{x})^5$ _____
- 8) If $y = \frac{x}{x^2 + 3}$, find dy/dx _____
- 9) Solve for x : $\frac{x-9}{x^2+3} = 0$ _____
- 10) If $y^3 - 2y + 7 = 16x$, find dy/dx _____

Name _____ Score _____

Calculus Warm-up # 16-C

NO CALCULATORS TODAY!

- 11) Draw a curve that is increasing and concave up.

12) $\int 6x^2 - 10x - 7 dx$ _____

13) $\int -\sin x dx$ _____

14) If $y = e^x \ln x$, find dy/dx _____

15) $\int 7e^x dx$ _____

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Calculus Warm-up # 16-D

NO CALCULATORS TODAY!

- 16) If $f'(x) = 9 - 8x^3$, find $f(x)$ _____
- 17) If $y = \ln(\sin x)$, find dy/dx _____
- 18) True or False: If $f(b)$ exists and $f'(b) = 0$, there must be a horizontal tangent at $x = b$. _____
- 19) True or False: If $f(x) = x^{16} + 2x^6$, then $f(17) = f(-17)$ _____
- 20) True or False: The function $y = |x^2 - 4|$ is differentiable at $x = 2$. _____

Name _____ Score _____

Calculus Warm-up # 17-A
NO CALCULATORS TODAY!

- 1) If $y = 3x^5 - 2x - 1$, find $y''(x)$ _____
- 2) If $f(x) = \ln x$, find $f''(x)$ _____
- 3) If $y = xe^x$, find $\frac{dy}{dx}$ _____
- 4) $\int \frac{3x^2}{x^3 + 1} dx$ _____
- 5) If the position of a particle at time t is given by the function $s(t) = 4t^3 - 5t^2 + 6t - 1$, find the particle's acceleration at $t = 2$. _____

Name _____ Score _____

Calculus Warm-up # 17-B
NO CALCULATORS TODAY!

- 6) $\int e^{\sin x} \cos x dx$ _____
- 7) Find the domain of the function
 $f(x) = \frac{\sqrt{x-1}}{x}$ _____
- 8) Find the vertical asymptote of the function
 $f(x) = \frac{2x+5}{3x-6}$ _____
- 9) $\lim_{x \rightarrow 0} \frac{\sin x}{3x}$ _____
- 10) If the position of a particle at time t is given by the function $s(t) = \sin 4t + 2t$, find the particle's velocity at $t = \frac{\pi}{3}$. _____

Name _____ Score _____

Calculus Warm-up # 17-C
NO CALCULATORS TODAY!

- 11) $\int_0^2 3x^2 - 4 dx$ _____
- 12) True or False: $\int \tan x dx = \sec^2 x + C$ _____
- 13) If $f(x) = e^{5x^2}$, find $f'(2)$ _____
- 14) Evaluate: $\int_1^4 \sqrt{x} dx$ _____
- 15) If the velocity of a particle at time t is given by the function $v(t) = t^2 - 2t - 1$, find the net change in position from $t = 0$ to $t = 3$. _____

Name _____ Score _____

Calculus Warm-up # 17-D
CALCULATORS ALLOWED

Get decimal answers and round to 3 decimal places

- 16) $\int_0^1 \arctan x dx$ _____
- 17) $\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^x$ _____
- 18) Solve for x : $x^2 = e^x$ _____
- 19) If $f(x) = \frac{5x^2}{\sqrt[3]{x-1}}$, find $f'(9)$ _____
- 20) If the velocity of a particle at time t is given by the function $v(t) = t^2 - 2t - 1$, find the total distance traveled from $t = 0$ to $t = 3$. _____

Name _____ Score _____

Calculus Warm-up # 18-A
NO CALCULATORS TODAY!

- 1) If $\sin \theta = 5x$, find $d\theta/dt$ _____
- 2) $\int_0^3 (2x-3)^2 dx$ _____
- 3) If $y = 2x \sin x$, find dy/dx _____
- 4) $\int \cos(5x-1) dx$ _____
- 5) If the position of a particle at time t is given by the function $s(t) = \frac{1}{3}t^3 - 4t^2 + 12t + 3$, find the time interval when the particle is moving to the left. _____

Name _____ Score _____

Calculus Warm-up # 18-B
NO CALCULATORS TODAY!

Given: $f(x) = x^3 + 12x + 1$

- 6) Find $f(1)$ _____
- 7) Find $f(3)$ _____
- 8) Find the slope of the secant line that goes through the points you found in #6 and #7. _____
- 9) For what value of c in the interval $(1, 3)$ is the slope of the tangent line drawn at $x = c$ equal to the slope you found in #8? _____
- 10) $\lim_{x \rightarrow 0} \frac{x}{\sin x}$ _____

Name _____ Score _____

Calculus Warm-up # 18-C
NO CALCULATORS TODAY!

- 11) Is the graph of $y = 4 - x^2$ concave upward or concave downward? _____
- 12) If the Trapezoid Rule is used to approximate the area under a portion of $y = 4 - x^2$, will it be an overestimate or underestimate? _____
- 13) Is the graph of $y = \frac{1}{x}$ concave up or concave down on the interval $(0,8)$? _____
- 14) If the Trapezoid Rule is used to approximate $\int_1^9 \frac{1}{x} dx$, will it be an over- or an underestimate? _____
- 15) If $y = \tan 7x^2$, find dy/dx _____

Name _____ Score _____

Calculus Warm-up # 18-D
NO CALCULATORS TODAY!

Given: $\int_1^8 f(x)dx = 40$ and $\int_1^5 f(x)dx = 10$

- 16) Find $\int_5^8 f(x)dx$ _____
- 17) Find $\int_1^8 (f(x)+3)dx$ _____
- 18) Find $\int_1^5 -2f(x)dx$ _____
- 19) If $f(x) = x^3 - 3x^2$, find $f''(x)$ _____
- 20) Write the equation of the tangent line to $f(x) = x^3 - 3x^2$ at its point of inflection. _____

Name _____ Score _____

Calculus Warm-up # 19-A

Answer True or False based on the graph below.

- 1) $\int_b^c f(x) dx < 0$ _____
- 2) $\int_b^a f(x) dx > 0$ _____
- 3) $\int_a^b f(x) dx > \int_a^c f(x) dx$ _____
- 4) $f''(a) > 0$ _____
- 5) If $f'(d) = f'(g) = f'(h) = 0$ and $g - d = h - g$,
then $\int_d^g f(x) dx = \int_g^h f(x) dx$ _____

Name _____ Score _____

Calculus Warm-up # 19-B

NO CALCULATORS TODAY!

- 6) Find the average value of $y = 2x^3$ on the interval $[0, 2]$. _____
- 7) Find $\frac{dy}{dx}$ if $y = x \ln 2x$ _____
- 8) Find the slope of the graph of $y = 2^e$ when $x = 2$. _____
- 9) True or False: If $a < b < c$, then $\int_a^b f(x) dx < \int_a^c f(x) dx$ _____
- 10) Multiple Choice: Which is equal to e^{x+5} ?
A. $e^x + e^5$ B. $\ln e^{x+5}$ C. $e^x e^5$ D. $e^{\ln(x+5)}$ _____

Name _____ Score _____

Calculus Warm-up # 19-C
NO CALCULATORS TODAY!

- 11) $\int_3^5 6 dx$ _____
- 12) If $f(x) = 2x$, what is $f''(x)$? _____
- 13) Multiple Choice: If $f(x) = |x|$, then $f'(-3) =$
A. 3 B. -3 C. 1 D. -1 _____
- 14) Multiple Choice: If $y = \ln e^{\sin x}$, then $\frac{dy}{dx} =$
A. $\sin x$ B. $\cos x$ C. $e^{\cos x}$ D. $e^{\sin x}$ _____
- 15) Multiple Choice: If $\int_2^6 f(x) dx = 20$, then $\int_2^6 (f(x) + 3) dx =$
A. 23 B. 27 C. 33 D. 32 _____

Name _____ Score _____

Calculus Warm-up # 19-D
NO CALCULATORS TODAY!

Answer TRUE or FALSE, based on the piecewise

$$\text{function } f(x) = \begin{cases} \frac{x^2 - 36}{x - k}, & \text{if } x \neq k \\ 2k & , \text{if } x = k \end{cases}$$

- 16) If $k = 5$, there is a vertical asymptote at $x = 5$. _____
- 17) If $k = 5$, $f(x)$ is not continuous at $x = 6$. _____
- 18) If $k = 5$, $f(6) = 10$. _____
- 19) If $k = 6$, $f(6) = 12$ _____
- 20) If $k = 6$, $f(x)$ is continuous at $x = 6$. _____