**Adjusting to the New AP Calculus**

**Curriculum Framework**

L’Hopital’s Rule is coming! Should we panic? Keep calm and BC on!

#4 BC 2016 Operational Free Response



#5 BC 2013 Operational Free Response



Inspired by #1 BC 2016 International Multiple Choice

Inspired by #3 AB 2016 International Multiple Choice

Inspired by #3 AB 2008 International Multiple Choice

Identify all asymptotes for

Inspired by #88 BC 2016 International Multiple Choice (only 9% of BC students answered correctly!)

Find each of the following limits using the graph at left.

i)

ii)

iii)



LO 3.2A Interpret the definite integral as the limit of a Riemann sum. Express the limit of a Riemann sum in integral notation.

Instructions: Match the integral expression in the left column with the appropriate limit of a Riemann sum in the right column.

**1. ­­\_\_\_\_\_ a.**

**2. ­­ \_\_\_\_\_ b.**

**3. ­­\_\_\_\_\_ c.**

**4. ­­\_\_\_\_\_ d.**

**5. ­­\_\_\_\_\_ e.**

**6. ­­ \_\_\_\_\_ f.**

**7. ­­\_\_\_\_\_ g.**

**8. ­­\_\_\_\_\_ h.**

**9. ­­\_\_\_\_\_ i.**

**10. ­­\_\_\_\_\_ j.**

LO 3.2A Interpret the definite integral as the limit of a Riemann sum. Express the limit of a Riemann sum in integral notation.

Instructions: Fill in the missing integral expression in the left column or the appropriate limit of a Riemann sum in the right column.

**1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Integration Techniques**

In each of the pairs of similar problems below, one of the problems can be solved using a u-substitution and the other can be solved using an algebraic manipulation to re-write the integrand. Determine the necessary technique and find each integral.

1. A. B.

2. A. B.

3. A. B.

 4. A. B.

5. A. B.

6. A. B.