Classroom Voting Questions: Calculus I

4.3 Families of Curves

1. The functions in Figure 4.4 have the form $y = A \sin x$. Which of the functions has the largest A? Assume the scale on the vertical axes is the same for each graph.

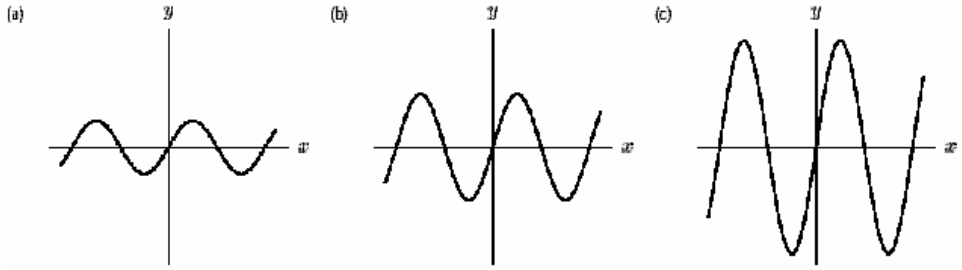

Figure 4.4

2. The functions in Figure 4.5 have the form $y = \sin(Bx)$. Which of the functions has the largest B? Assume the scale on the horizontal axes is the same for each graph.

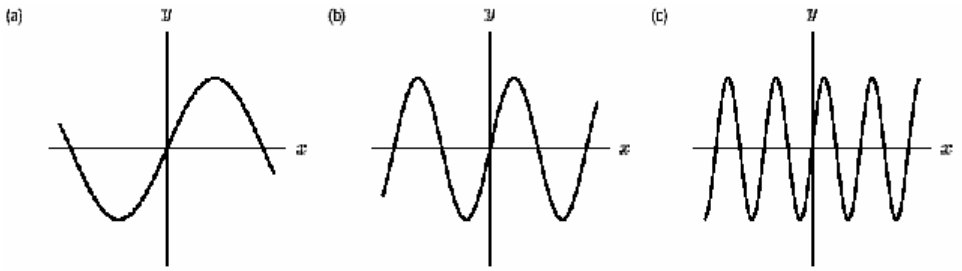

Figure 4.5

3. Let $f(x) = ax + b/x$. What are the critical points of $f(x)$?

   (a) $-b/a$
   (b) 0
   (c) $\pm\sqrt{b/a}$
   (d) $\pm\sqrt{-b/a}$
   (e) No critial points

4. Let $f(x) = ax + b/x$. Suppose a and b are positive. What happens to $f(x)$ as b increases?

   (a) The critical *points* move further apart.

(b) The critical *points* move closer together.

5. Let $f(x) = ax + b/x$. Suppose a and b are positive. What happens to $f(x)$ as b increases?

   (a) The critical *values* move further apart.

   (b) The critical *values* move closer together.

6. Let $f(x) = ax + b/x$. Suppose a and b are positive. What happens to $f(x)$ as a increases?

   (a) The critical *points* move further apart.

   (b) The critical *points* move closer together.

7. Let $f(x) = ax + b/x$. Suppose a and b are positive. What happens to $f(x)$ as a increases?

   (a) The critical *values* move further apart.

   (b) The critical *values* move closer together.

8. Find a formula for a parabola with its vertex at (3,2) and with a second derivative of -4.

   (a) $y = -4x^2 + 48x - 106$.

   (b) $y = -4x^2 + 24x - 34$.

   (c) $y = -2x^2 + 12x - 16$.

   (d) $y = -2x^2 + 4x + 8$.