

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.

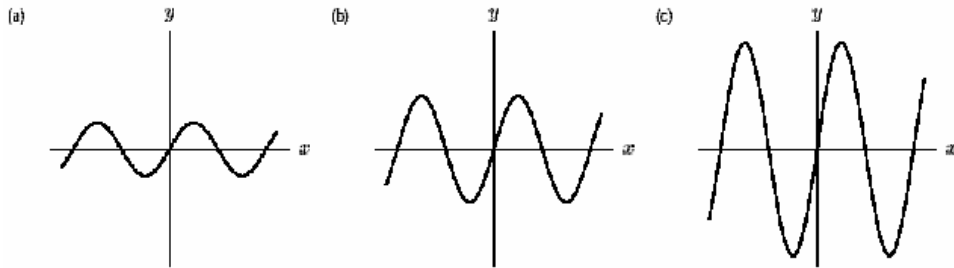


Figure 4.4

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.

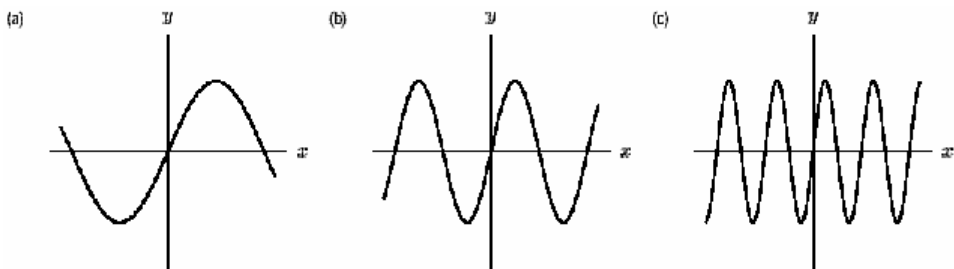


Figure 4.5

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