

Classroom Voting Questions: Precalculus

Powers, Polynomials, and Rational Functions

1. Which of the following is not a power function?

(a) $f(x) = 3x^2$

(b) $f(x) = x^{1.5}$

(c) $f(x) = 6 \cdot 2^x$

(d) $f(x) = -3x^{-\pi}$

2. As $x \rightarrow \infty$, which function dominates? That is, which function is larger in the long run?

(a) $0.1x^2$

(b) $10^{10}x$

3. As $x \rightarrow \infty$, which function dominates?

(a) $0.25\sqrt{x}$

(b) $25,000x^{-3}$

4. As $x \rightarrow \infty$, which function dominates?

(a) $3 - 0.9^x$

(b) $\log x$

5. Which function dominates as $x \rightarrow \infty$?

(a) x^2

(b) e^x

6. As $x \rightarrow \infty$, which function dominates?

(a) x^3

(b) 2^x

7. As $x \rightarrow \infty$, which function dominates?

- (a) $10(2^x)$
- (b) $72,000x^{12}$

8. Which of these functions dominates as $x \rightarrow \infty$?

- (a) $f(x) = -5x$
- (b) $g(x) = 10^x$
- (c) $h(x) = 0.9^x$
- (d) $k(x) = x^5$
- (e) $l(x) = \pi^x$

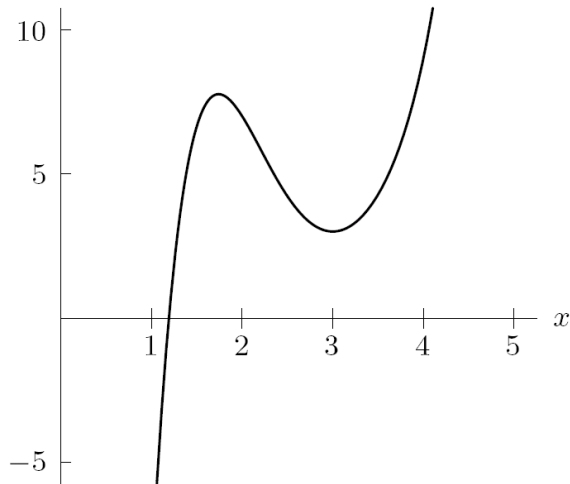
9. If $f(x) = ax^2 + bx + c$ is a quadratic function, then the lowest point on the graph of $f(x)$ occurs at $x = -b/2a$.

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

10. Under what condition is the graph of the quadratic function described by $f(x) = ax^2 + bx + c$ concave down?

- (a) $a < 0$.
- (b) $b < 0$.
- (c) $c < 0$.
- (d) More than one of the above.
- (e) None of the above.

11. What is the degree of the graph of the polynomial in the figure below?

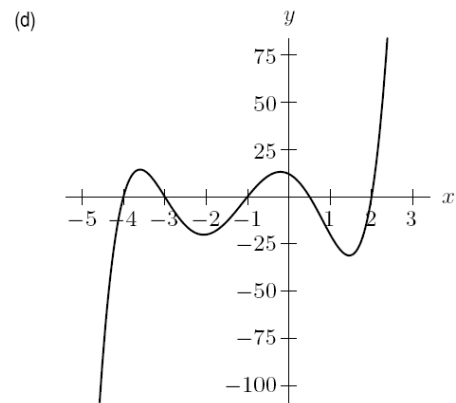
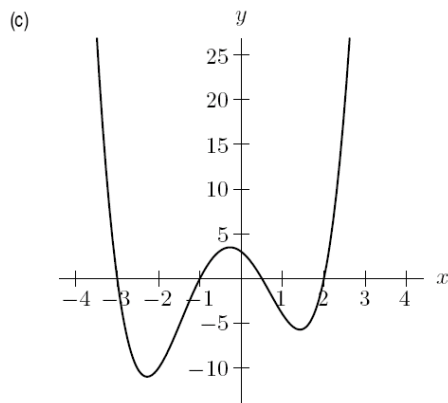
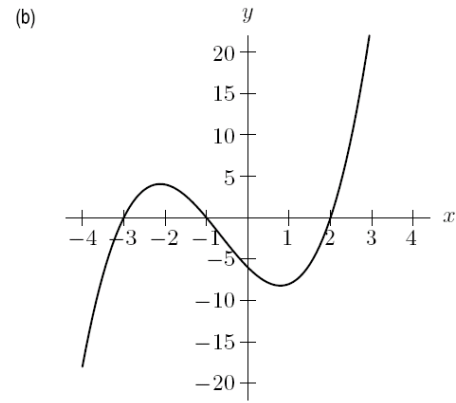
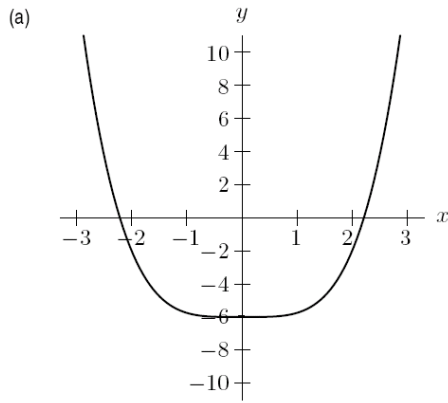


- (a) 3
- (b) 5
- (c) Either (a) or (b)
- (d) Neither (a) nor (b)
- (e) Any polynomial of degree greater than 2

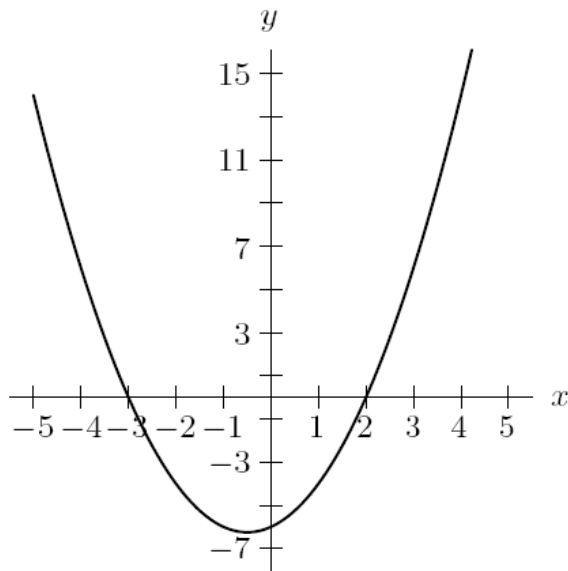
12. Which of the options below describes a function which is even?

- (a) Any polynomial of even degree.
- (b) Any polynomial of odd degree.
- (c) $f(x) = 9x^6 - 3x^2 + 2$.
- (d) $f(x) = 3x^4 - 2x^3 + x^2$.
- (e) More than 1 of the above.
- (f) None of the above.

13. The equation $y = x^3 + 2x^2 - 5x - 6$ is represented by which graph?



14. The graph below is a representation of which function?



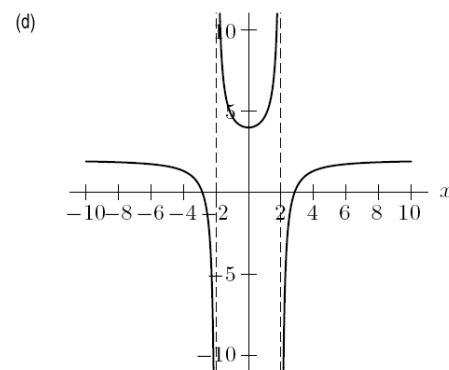
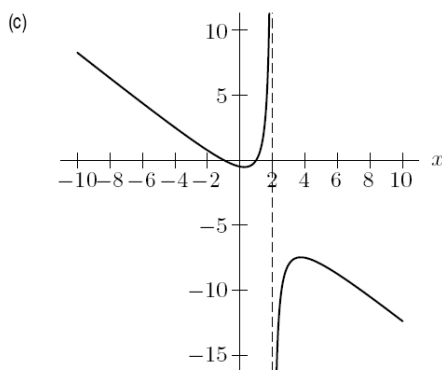
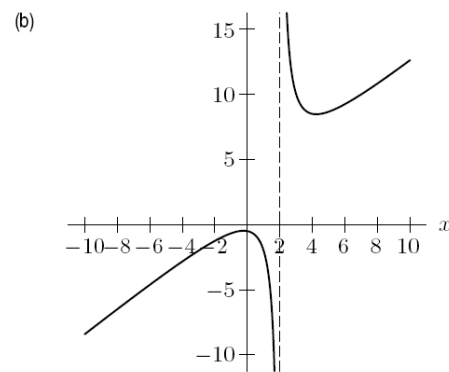
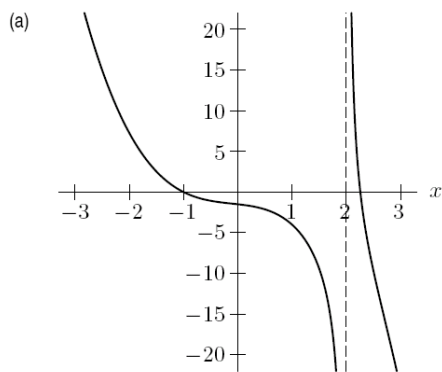
- (a) $y = 3x + 2$
- (b) $y = (x - 2)(x + 3)$
- (c) $y = (x - 6)(x - 2)$
- (d) $y = (x - 3)(x + 2)$

(e) none of these

15. Let $f(x) = \frac{x^2-1}{x+1}$ and $g(x) = x - 1$, then $f(x) = g(x)$.

- (a) True, and I am very confident
- (b) True, but I am not very confident
- (c) False, but I am not very confident
- (d) False, and I am very confident

16. Which if the following is a graph for $y = \frac{1-x^2}{x-2}$. (No calculators allowed.)



17. Which of the graphs represents $y = \frac{2x}{x-2}$?

