

1. Sketch the graph of the following quadratic functions. Find the vertex and intercepts.

a) $f(x) = -(x - 2)^2 + 1$

b) $g(x) = (x + 2)^2 + 1$

c) $h(x) = (x - 2)^2 - 1$

d) $k(x) = -(x + 1)^2 + 2$

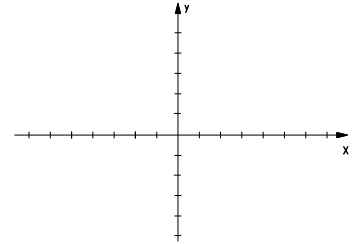
e) $y = -(x - 2)^2 + 1$

f) $f(x) = 0.5(x + 1)^2 - 2$

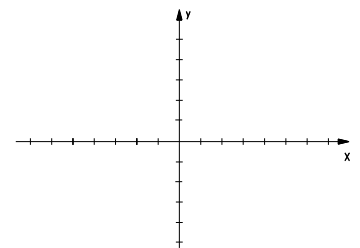
g) $f(x) = x^2 - 4x + 1$

h) $f(x) = 2x^2 - 8x + 5$

2. Let $f(x) = 3x - 4$. Find $f^{-1}(x)$, and graph both f and f^{-1} .



3. Let $f(x) = 2x + 6$. Find $f^{-1}(x)$, and graph both f and f^{-1} .



4. Let $f(x) = x^3$. Find $f^{-1}(x)$, and graph both f and f^{-1} .

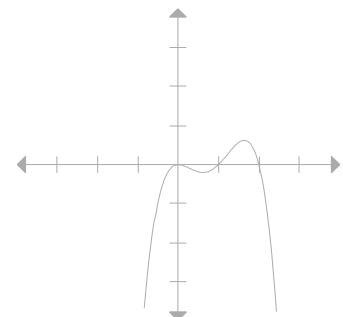
For problems 5-8 use the graph on the right.

5. Find the x -intercepts of $P(x)$, the polynomial at the right

6. The y -intercept of $P(x)$ is _____

7. The degree of $P(x)$ could be _____

8. Find a polynomial function representing the graph.



9. Find a fifth degree polynomial function that has zeros: -2, 0, and 1. _____

For problems 10 - 12 let $f(x) = -10x^5 + 5x^4 - 3x + 4$.

10. The y -intercept of f is _____

11. The degree of f is _____

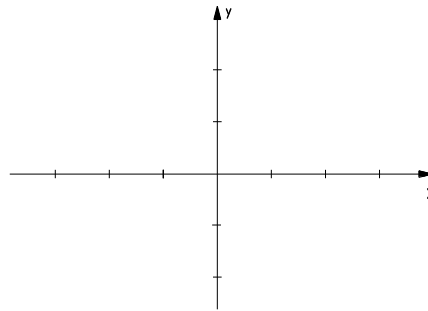
12. Determine the end behavior of the graph of the function f

Graph the following polynomial functions. Determine the degree and x -intercept(s).

13. $f(x) = x(x - 3)^2$

14. $f(x) = x^2(x - 3)$

15. $f(x) = -2x^2(x - 3)^2$



16. Graph the piecewise-defined function $f(x) = \begin{cases} -2x + 1, & x < 0 \\ -x^2 - 1, & x \geq 0 \end{cases}$

For problems 13 - 15 consider the rational function $f(x) = \frac{2x^2 - 3x}{3x^2 - 75}$.

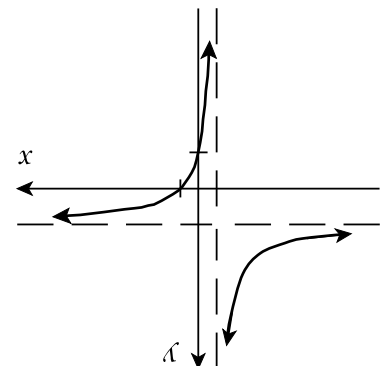
17. Find the vertical asymptote(s) of $f(x)$

18. Find the horizontal asymptote of $f(x)$

19. Graph $f(x)$.

20. i) Find an equation for the graph at the right.

ii) Find the vertical asymptote and the horizontal asymptotes.



For problems 21 -24 consider the rational function $f(x) = \frac{2x + 1}{x^2 - x - 2}$.

21. Find the y intercept of $f(x)$.

22. Find the domain of $f(x)$.

23. Find the x intercept of $f(x)$.

24. Graph $f(x)$.

25. Graph $g(x) = \frac{x}{x - 1}$

26. Graph $f(x) = \frac{x}{(x - 1)^2}$

27. $h(x) = \frac{x^2}{x - 1}$

