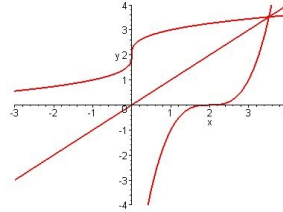
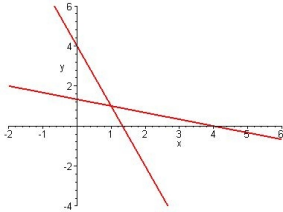


1. Find $f^{-1}(x)$ and graph both f and f^{-1} . a) $f(x) = -3x + 4$ b) $f(x) = (x - 2)^3$

a) $f^{-1}(x) = \frac{-x+4}{3}$

b) $f^{-1}(x) = \sqrt[3]{x+2}$



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

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

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

Vertex: (2, 1)

Vertex: (2, -3)

x-intercepts: $x = 1, 3$

x-intercepts: $x = \frac{4 - \sqrt{6}}{2} \approx .775, x = \frac{4 + \sqrt{6}}{2} \approx 3.225$

y-intercepts: $y = -3$

y-intercepts: $y = 5$

3. Let $f(x) = 2x + 2$ and $g(x) = (x - 3)^2, x \geq 3$. Find the inverse functions and graph all of them.

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

$g^{-1}(x) = -\sqrt{x} + 3, x \geq 0$

For problems 4-7 use the graph of the polynomial $P(x)$, at the right

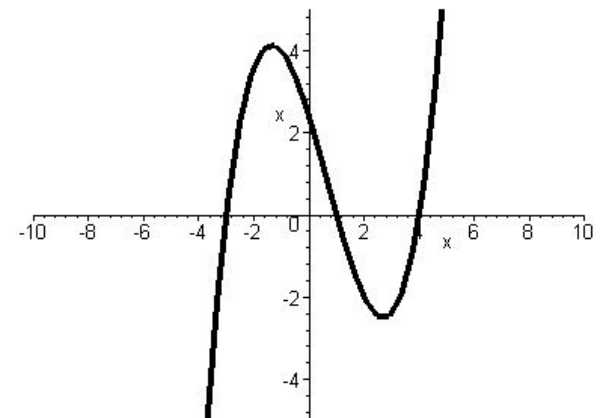
4. Find the x-intercepts of $P(x)$ $x = -3, 1, 4$

5. Find the y-intercept of $P(x)$ is $y \approx 2$

6. Find the degree of $P(x)$ 3

7. Find a polynomial function representing the graph.

$P(x) = \frac{1}{6}(x+3)(x-1)(x-4)$



8. Find a seventh degree polynomial function that has zeros(x-intercepts): -2, 0, and 1.

$f(x) = x^3(x+2)^2(x-1)^2$

9. Let $f(x) = 27x^6 + 15x^4 - 3x + 14$.

a) Find the y -intercept of f $y = 14$ Find the degree of f 6

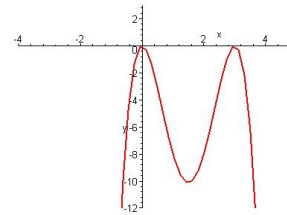
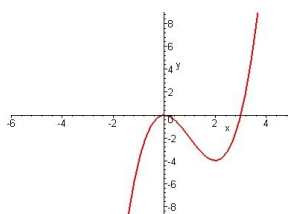
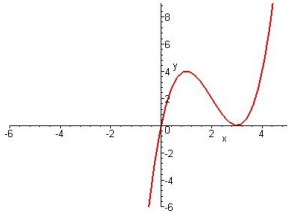
b) Determine the end behavior of the graph of the function f : *Rises to the right and rises to the left*

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

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

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

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



For problems 11 and 12 consider the rational function $f(x) = \frac{2x^2 - 3x}{3x^2 - 75}$.

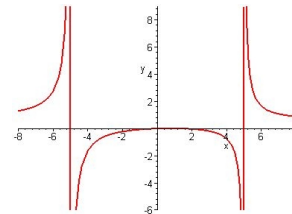
11. Find the vertical asymptote(s) of $f(x)$ and the horizontal asymptote of $f(x)$. Find intercepts and graph $f(x)$.

vertical asymptotes $x = 5, -5$

horizontal asymptote $y = \frac{2}{3}$

x-intercepts: $x = 0, 1.5$

y-intercepts: $y = 0$



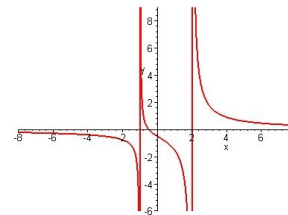
13. Find the x intercept, y intercept and the domain of the rational function $f(x) = \frac{2x + 1}{x^2 - x - 2}$. Graph $f(x)$.

vertical asymptote $x = 2, -1$

horizontal asymptote $y = 0$

x-intercepts: $x = -1.5$

y-intercepts: $y = -1.5$



Graph the following rational functions:

14. $g(x) = \frac{x}{x - 1}$,

15. $f(x) = \frac{x}{(x - 1)^2}$,

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