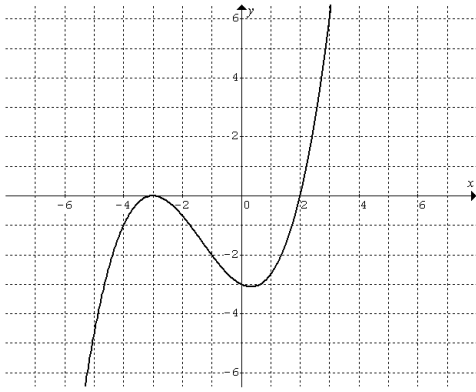
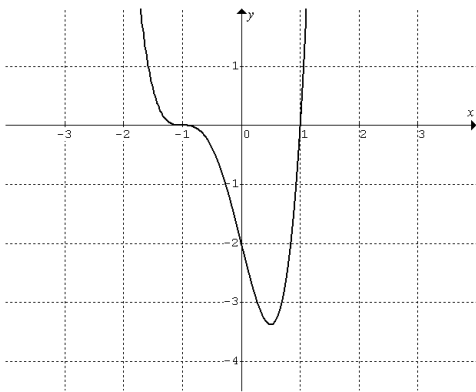


Test Review



[1] Write an equation for the cubic polynomial function whose graph is shown here. Note that the y-intercept is -3.



[2] Write an equation for the quartic polynomial function whose graph is shown here. Note that the y-intercept is -2.

[3] Find a quadratic polynomial with zeros $x = -2 \pm 3i$.

[4] Find a cubic polynomial with zeros $x = -2$ and $x = 1 \pm i$.

[5] Factor and find all real and non-real zeros.

[a] $f(x) = x^2 - 2x + 5$

[b] $f(x) = x^3 + 1$

[c] $f(x) = x^3 - 7x^2 + 19x - 13$

[d] $f(x) = x^3 - 3x^2 + x + 5$

[e] $f(x) = x^3 + x + 10$

[f] $f(x) = x^4 - 9x^3 + 30x^2 - 44x + 24$

[6] Sketch: [a] $f(x) = x^3 - 3x - 2$

[b] $f(x) = x^4 - 7x^3 + 15x^2 - 13x + 4$

[7] For each function, find the x-intercept(s), if any. Remember to factor and cancel whenever possible.

[a] $f(x) = \frac{x^2 - 9}{x - 3}$

[b] $f(x) = \frac{x^3 - 27}{x + 2}$

[c] $f(x) = \frac{x^2 + 5x + 6}{x^2 + x - 2}$

[d] $f(x) = \frac{x^3 - x}{x^2 - 1}$

$$[e] f(x) = \frac{x-4}{x^2-16}$$

$$[f] f(x) = \frac{x+4}{x-5}$$

[8] For each function, find the x -intercept(s), if any.

$$[a] f(x) = \frac{x^2-10}{x-5}$$

$$[b] f(x) = \frac{x^3-27}{x+3}$$

$$[c] f(x) = \frac{x^2+x-3}{x^2+2x-3}$$

$$[d] f(x) = \frac{x^3-x}{x^2-1}$$

$$[e] f(x) = \frac{x+4}{x^2+16}$$

$$[f] f(x) = \frac{x-4}{x+5}$$

[9] For each function, find the vertical asymptote(s), if any.

$$[a] f(x) = \frac{x-1}{x^2+1}$$

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

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

$$[d] f(x) = \frac{x^2-6x+8}{x^2-4}$$

(note: #14 and #15 have different answers!)

$$[e] f(x) = \frac{x+4}{x^2-16}$$

$$[f] f(x) = \frac{x^2+6x+9}{x^2-9}$$

[10] For each function, find the non-vertical asymptote.

$$[a] f(x) = \frac{x-1}{x^2+1}$$

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

$$[c] f(x) = \frac{x^3-2}{x^4-1}$$

$$[d] f(x) = \frac{2x^2-6x+8}{x^2-5}$$

$$[e] f(x) = \frac{5x+4}{10x-1}$$

$$[f] f(x) = \frac{x^3+27}{x^3-8}$$

[11] For each function, find the "hole."

$$[a] f(x) = \frac{x+1}{x^2-1}$$

$$[b] f(x) = \frac{x-2}{x^2-4}$$

$$[c] f(x) = \frac{x+4}{x^2+5x+4}$$

$$[d] f(x) = \frac{2x^2-6x+8}{x^2-5}$$