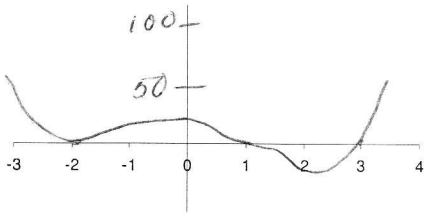
POLYNOMIAL & RATIONAL FUNCTIONS (1.6) NAME_____

1. Consider the function $y(x) = x^6 - 2x^5 - 8x^4 + 14x^3 + 11x^2 - 28x + 12$

A. Plot $y(x)$ in the window $-3 \le x \le 4$, $-50 \le y \le 100$.



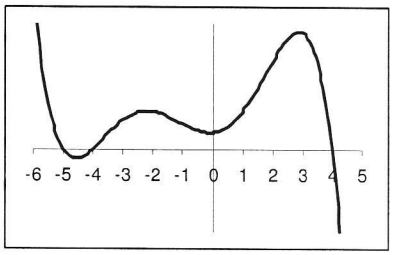
B. Find the zeros of $y(x)$.

$x = -2, 1, 3$

C. Express $y(x)$ in factored form.

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

2. Create a possible equation for the polynomial graphed below. Indicate the sign of the leading coefficient.



$y = k(x+5)(x+4)(x-4)(x^2+1)$

$k < 0$

3. Solve for h as a function of s and simplify: $s = 8w^{0.25}h^{0.75}$

$s = 8w^{\frac{1}{4}}h^{\frac{3}{4}}$

$\frac{s}{8w^{\frac{1}{4}}} = h^{\frac{3}{4}}$

$\left(\frac{s}{8w^{\frac{1}{4}}}\right)^{\frac{4}{3}} = \left(h^{\frac{3}{4}}\right)^{\frac{4}{3}}$

$h = \frac{s^{\frac{4}{3}}}{16w^{\frac{1}{3}}}$

$h = \frac{s}{16}\sqrt[3]{\frac{s}{w}}$

4. Create equations of rational functions with the following characteristics:

A. A horizontal asymptote of $y = 2$ and a vertical asymptote of $x = 4$.

example $f(x) = \frac{2x}{x-4}$

There are many possible answers

B. No horizontal and no vertical asymptotes.

$g(x) = \frac{x^3 - 1}{x^2 + 1}$