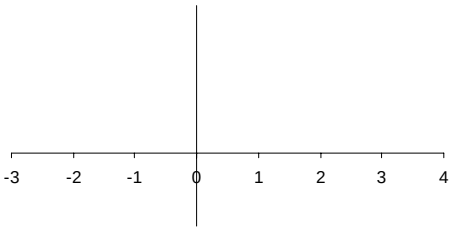
POLYNOMIAL & RATIONAL FUNCTIONS (1.6) NAME_____

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

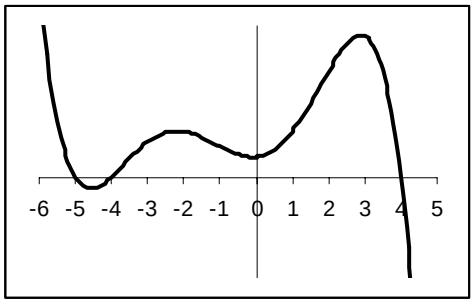
A. Plot $y(x)$ in the window $-3 \le x \le 4$, $-50 \le y \le 100$.



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

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

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



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

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

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

B. No horizontal and no vertical asymptotes.

5. Match the function expressed in words with a graph and an equation. Find the horizontal asymptote for each,

A. Average cost of producing x items.

B. The oxygen content in a lake after dumping in fertilizer as a function of time. (The oxygen content decreases at first, but then returns to its previous level.)

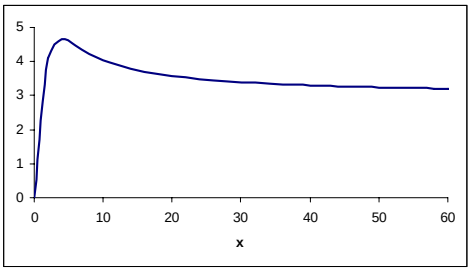
C. The amount of a drug in a body as a function of time. (Assume the drug was given by injection.)

D. The number of people purchasing a (trendy) new product as a function of time.

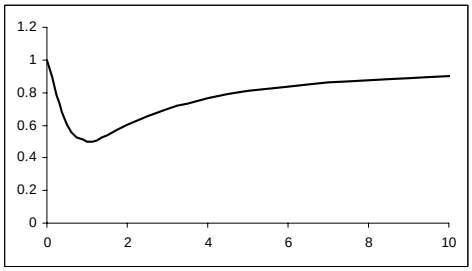
E. The number of people getting a particular disease during an epidemic as a function of time.

(*i*) $y = \dfrac{25x+2}{5x^3+1}$ (*ii*) $y = \dfrac{25x+6x^2}{2x^2+10}$ (*iii*) $y = \dfrac{4x^2}{x^2+9}$ (*iv*) $y = \dfrac{20x+1000}{x}$ (*v*) $y = \dfrac{x^2-x+1}{x^2+1}$

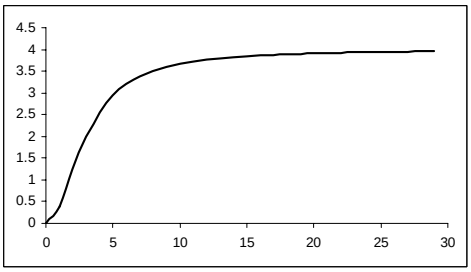
a.



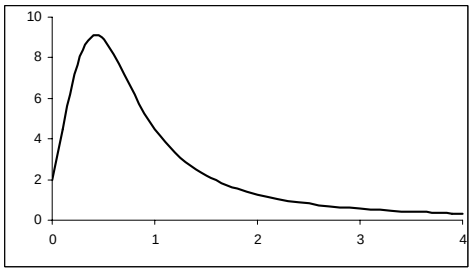
b.



c.



d.



e.