Worksheet 2010-11-05

Name:

1. For the following polynomials, give the leading term and the end behavior.

(a)
$$17(x^3 + 4x^2 - 3x + 2)^{12}(x - 2)^4$$
 (b) $17(x^3 + 4x^2 - 3x + 2)^{12}(x - 2)^3$

Leading Term:

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 $x \to \infty, y \to x \to \infty, y \to$

- $x \to -\infty, \, y \to \qquad \qquad x \to -\infty, \, y \to$
- (c) $-17(x^3 + 4x^2 3x + 2)^{12}(x 2)^4$ (d) $-17(x^3 + 4x^2 3x + 2)^{12}(x 2)^3$

Leading Term:

For the following functions give the inverse, the domains, and the ranges.

(a) $f(x) = (x+2)^2 + 3$ Domain of f: Range of f: Domain of f^{-1} :

Formula for $f^{-1}(x) =$

(b) $f(x) = \frac{2+x}{3+x}$ Domain of f: Range of f^{-1} : Domain of f^{-1} :

Formula for $f^{-1}(x) =$

3. Which of the following are 1–1 functions?

(a)
$$y = x$$

(b) $y = x + 1$
(c) $y = x^2$
(d) $y = x^2 + 1$
(e) $y = |x|$
(f) $y = |x| + 1$
(g) $y = \sqrt{x}$
(h) $y = \sqrt{x} + 1$

4. Prove that the following functions are not 1-1 by giving two xs that have the same ys:

- (a) $y = x^4$ $x_1 = x_1 = x_1 = x_2 = x_2 = y = y = y = y_1 = y_2 = y_2 = y_2 = y_1 = y_2 = y_2 = y_2 = y_1 = y_2 = y$
- 5. Find the vertex of the following functions:

(a)
$$y = 2x^2 + 12x + 4$$
 (b) $y = 2(x+3)^2 - 14$

6. Which of the following functions are even or odd or both or neither? (Mark E, O, B, or N) $\,$

(a)
$$y = x$$

(b) $y = x + 1$
(c) $y = x^2$
(d) $y = x^2 + 1$
(e) $y = x^3$
(f) $y = x^3 + 1$
(g) $y = |x|$
(h) $y = |x| + 1$

(i) y = (x - 1) (j) $y = (x - 1)^2$ (k) $y = (x - 1)^3$ (l) y = |x - 1|