2.1 Power and Radical Functions   Name: _____

Graph and analyze each function. Describe the domain, range, intercepts, end behavior, continuity, and where the function is increasing or decreasing.

A

$$f(x) = \frac{1}{2}x^4$$

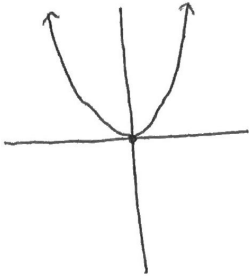Domain: __R__   Sketch a graph:

Range: __y ≥ 0__

intercepts: $(0, 0)$

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = \infty$

$\lim\limits_{x \to \infty} f(x) = \infty$

Continuity: __R__

Inc: $(0, \infty)$ Dec: $(-\infty, 0)$

B

$$f(x) = -x^7$$

Domain: __R__   Sketch a graph:
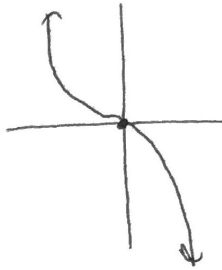
Range: __R__

intercepts: $(0, 0)$

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = \infty$

$\lim\limits_{x \to \infty} f(x) = -\infty$

Continuity: __R__

Inc: _____   Dec: $(-\infty, \infty)$

C

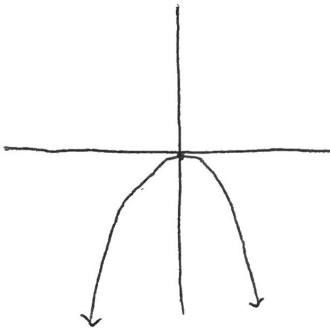$$f(x) = -3x^6$$

Domain: __R__   Sketch a graph:

Range: __y ≤ 0__

intercepts: $(0, 0)$

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = -\infty$

$\lim\limits_{x \to \infty} f(x) = -\infty$

Continuity: __R__

Inc: $(-\infty, 0)$ Dec: $(0, \infty)$

D

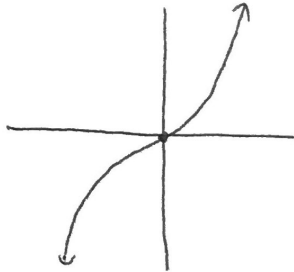$$f(x) = \frac{2}{3}x^5$$

Domain: __R__   Sketch a graph:

Range: __R__

intercepts: $(0, 0)$

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = -\infty$

$\lim\limits_{x \to \infty} f(x) = \infty$
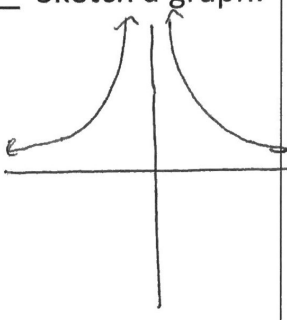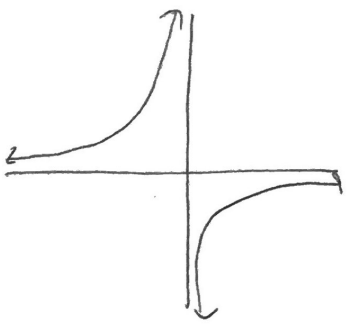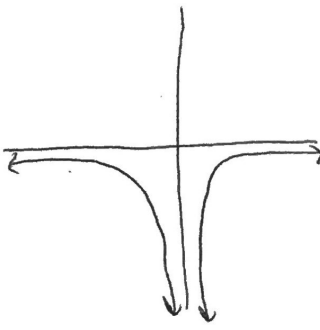
Continuity: __R__

Inc: $(-\infty, \infty)$ Dec: _____

2.1 Power and Radical Functions   Name: _____

Graph and analyze each function. Describe the domain, range, intercepts, end behavior, continuity, and where the function is increasing or decreasing.

A $f(x) = 3x^{-2} = \dfrac{3}{x^2}$

Domain: __$x \neq 0$__   Sketch a graph:

Range: __$y > 0$__

intercepts: none

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = 0$

$\lim\limits_{x \to \infty} f(x) = 0$

Continuity: __infinite discontinuity @ $x=0$__

Inc: __$(-\infty, 0)$__   Dec: __$(0, \infty)$__

B $f(x) = -\dfrac{3}{4}x^{-5} = -\dfrac{3}{4x^5}$

Domain: __$x \neq 0$__   Sketch a graph:

Range: __$y \neq 0$__

intercepts: none

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = 0$

$\lim\limits_{x \to \infty} f(x) = 0$

Continuity: __infinite discontinuity @ $x=0$__

Inc: __$(-\infty, 0) \cup (0, \infty)$__ Dec: __/__

C $f(x) - \dfrac{1}{2}x^{-4} = -\dfrac{1}{2x^4}$

Domain: __$x \neq 0$__   Sketch a graph:

Range: __$y < 0$__

intercepts: none

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = 0$

$\lim\limits_{x \to \infty} f(x) = 0$

Continuity: __infinite discontinuity @ $x=0$__

Inc: __$(0, \infty)$__   Dec: __$(-\infty, 0)$__

D $f(x) = 4x^{-3} = \dfrac{4}{x^3}$

Domain: __$x \neq 0$__   Sketch a graph:

Range: __$y \neq 0$__

intercepts: none

End Behavior:
$\lim\limits_{x \to -\infty} f(x) = 0$

$\lim\limits_{x \to \infty} f(x) = 0$

Continuity: __infinite discontinuity @ $x=0$__

Inc: _____   Dec: __$(-\infty, 0) \cup (0, \infty)$__