Candle Center - Infinite Precalculus Name________________________________

Power Functions

Date________________ Period____

Consider each power function. Determine the power and constant of variation.

1) $f(x) = 6x^{\frac{3}{7}}$

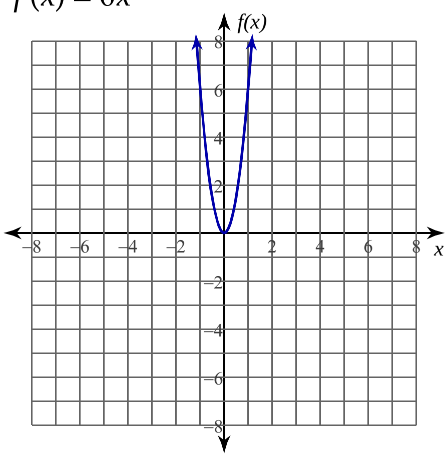
2) $f(x) = 5x^{-6}$

3) $f(x) = 8x^{-\frac{1}{3}}$

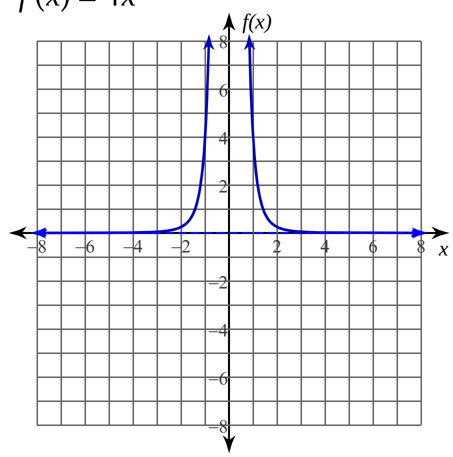
4) $f(x) = 2x^{\frac{5}{7}}$

Consider each power function. Determine the domain and range, intercepts, end behavior, continuity, and regions of increase and decrease.

5) $f(x) = 6x^2$



6) $f(x) = 4x^{-4}$



7) $f(x) = 5x^{-4}$

8) $f(x) = 8x^{-\frac{4}{3}}$

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Power Functions

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Consider each power function. Determine the power and constant of variation.

1) $f(x) = 6x^{\frac{3}{7}}$

Power: $\frac{3}{7}$ Constant: 6

2) $f(x) = 5x^{-6}$

Power: -6 Constant: 5

3) $f(x) = 8x^{-\frac{1}{3}}$

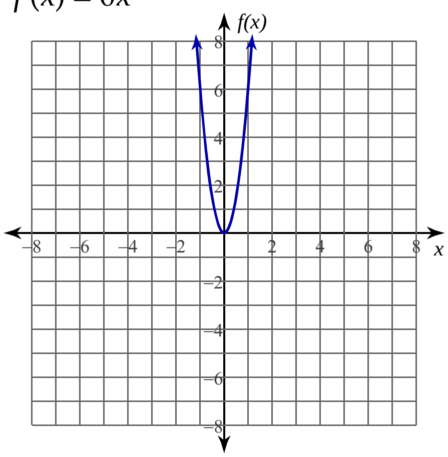
Power: $-\frac{1}{3}$ Constant: 8

4) $f(x) = 2x^{\frac{5}{7}}$

Power: $\frac{5}{7}$ Constant: 2

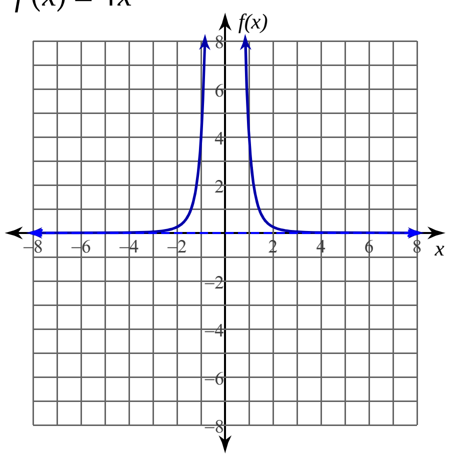
Consider each power function. Determine the domain and range, intercepts, end behavior, continuity, and regions of increase and decrease.

5) $f(x) = 6x^2$



Domain: $(-\infty, \infty)$
Range: $[0, \infty)$
x-intercept: 0 y-intercept: 0
$\lim_{x\to-\infty} f(x) = \infty$ $\lim_{x\to\infty} f(x) = \infty$
Continuous on $(-\infty, \infty)$
Increasing: $(0, \infty)$
Decreasing: $(-\infty, 0)$

6) $f(x) = 4x^{-4}$



Domain: $(-\infty, 0) \cup (0, \infty)$
Range: $(0, \infty)$
No intercepts
$\lim_{x\to-\infty} f(x) = 0$ $\lim_{x\to\infty} f(x) = 0$
Infinite discontinuity at $x = 0$
Increasing: $(-\infty, 0)$
Decreasing: $(0, \infty)$

7) $f(x) = 5x^{-4}$

Domain: $(-\infty, 0) \cup (0, \infty)$
Range: $(0, \infty)$
No intercepts
$\lim_{x\to-\infty} f(x) = 0$ $\lim_{x\to\infty} f(x) = 0$
Infinite discontinuity at $x = 0$
Increasing: $(-\infty, 0)$
Decreasing: $(0, \infty)$

8) $f(x) = 8x^{-\frac{4}{3}}$

Domain: $(-\infty, 0) \cup (0, \infty)$
Range: $(0, \infty)$
No intercepts
$\lim_{x\to-\infty} f(x) = 0$ $\lim_{x\to\infty} f(x) = 0$
Infinite discontinuity at $x = 0$
Increasing: $(-\infty, 0)$
Decreasing: $(0, \infty)$