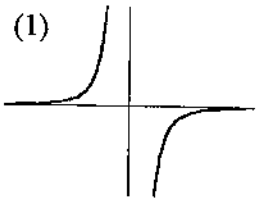
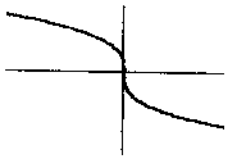
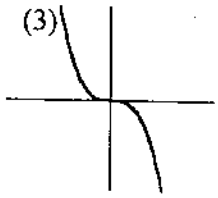
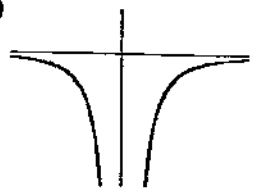
Name Answers 28/28 quiz power functions - transformations 2016 V1 VERSION 1.doc

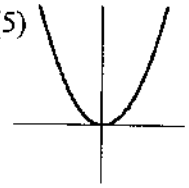
1) Refer to the sketches of power functions below (in the form $y = kx^p$) to answer questions a – k.

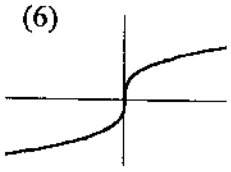
(1) 

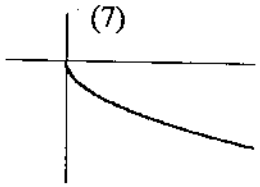
(2) 

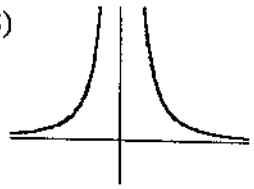
(3) 

(4) 

(5) 

(6) 

(7) 

(8) 

PLEASE READ THIS: To get credit for each question below you must list all of the graphs above which satisfy the question. Write "*none*" if none of the graphs satisfy the question.

+1 each

$y = -x^{-2}$ a. Write a possible equation for function #4 above?

2 b. Which function(s) are concave down for **x < 0** and concave up for **x > 0**?

4 c. Which function(s) are concave down for their entire domain?

1, 6 d. Which function(s) are increasing for their entire domain?

none e. Which function(s) are concave down and decreasing for their entire domain?

1, 4, 8 f. Which function(s) have asymptotes of x = 0 and y = 0?

2, 3, 5, 6 g. Which function(s) have a domain of all reals?

2, 6, 7 h. In which function(s) is the value of the exponent $0 < p < 1$?

1, 2, 3, 4, 7 i. In which function(s) is the value of the constant k negative?

1, 4, 8 j. In which function(s) is the end behavior as $x \to \infty, y \to 0$ and as $x \to -\infty, y \to 0$.

2, 3 k. In which function(s) is the end behavior as $x \to \infty, y \to -\infty$ and as $x \to -\infty, y \to \infty$.

2) Find the value p in the power function $y = kx^p$ given $f(2) = -0.75$ and $f(5) = -0.048$.
(You must show algebraic work to get full credit for this problem.)

$-.75 = k(2)^p$

$-.048 = k(5)^p$

$\frac{-.75}{2^p} = \frac{-.048}{5^p}$

$2^p(-.048) = 5^p(-.75)$

$\frac{-.048}{-.75} = \left(\frac{5}{2}\right)^p$

$\frac{8}{125} = \left(\frac{5}{2}\right)^p$

[5]

$p = -3$

3) A power function in the form $y = kx^p$, passes through point $\left(\frac{1}{3}, \frac{2}{5}\right)$.

Find the value of k given that $p = -2$. **(Show work.)**

$\frac{2}{5} = k\left(\frac{1}{3}\right)^{-2}$ → $\frac{1}{9} \cdot 9k = \frac{2}{5} \cdot \frac{1}{9}$

$k = \frac{2}{45}$

[2]

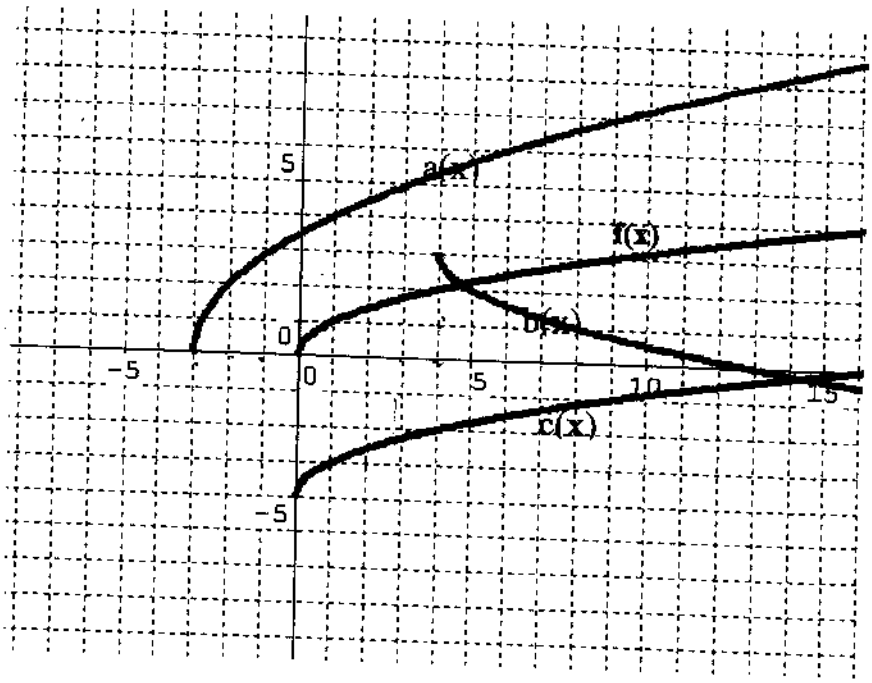
$k = \frac{2}{45}$ or $.0\overline{4}$

4) Given the power function $f(x) = x^{\frac{1}{2}}$ below, use the rules of shifting and stretching to determine the explicit equations of the following.

[3] a(x)= $2(x+3)^{1/2}$

[3] b(x)= $-(x-4)^{1/2}+3$

[2] c(x)= $x^{1/2} - 4$



5) Find the domain of $g(x)$

$g(x) = 2\sqrt{3-2x}$

[2] domain: $x \leq \frac{3}{2}$