

Rational Functions Transformations, Day 1 - Answers

1. $f(x) = \frac{1}{x+4} + 5$

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

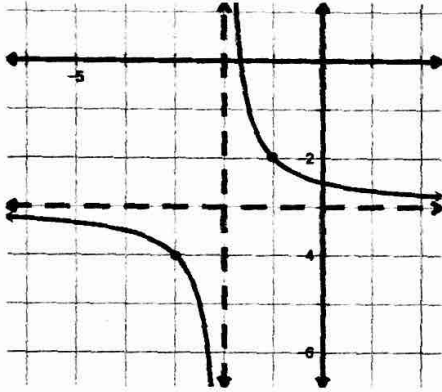
3. $f(x) = \frac{1}{x-3} + 2$

4. $f(x) = \frac{1}{x+1} - 3$

5. D: $(-\infty, -2) \cup (-2, \infty)$

R: $(-\infty, -3) \cup (-3, \infty)$

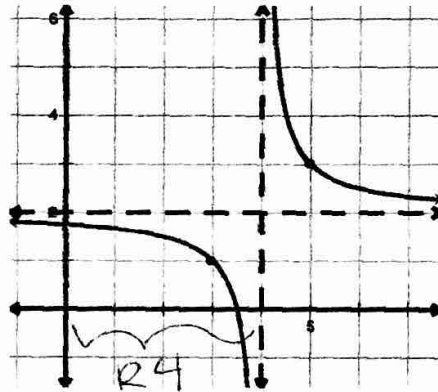
Asymp: $x = -2, y = -3$



6. D: $(-\infty, 4) \cup (4, \infty)$

R: $(-\infty, 2) \cup (2, \infty)$

Asymp: $x = 4, y = 2$



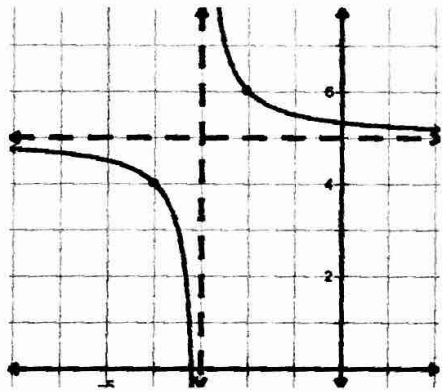
P.F. Domain
 $(-\infty, 0) \cup (0, \infty)$

Range
 $(-\infty, 0) \cup (0, \infty)$

7. D: $(-\infty, -3) \cup (-3, \infty)$

R: $(-\infty, 5) \cup (5, \infty)$

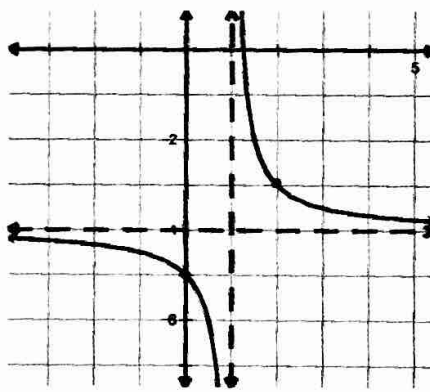
Asymp: $x = -3, y = 5$



8. D: $(-\infty, 1) \cup (1, \infty)$

R: $(-\infty, -4) \cup (-4, \infty)$

Asymp: $x = 1, y = -4$



9. $\frac{3}{x+2}$

10. $\frac{x+3}{x-1}$

11. $\frac{2}{3x^2}$

12. $\frac{1}{x^3(2x+1)}$

2. the asymptotes
are ~~is~~ down 4 & right 2

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

↑ ↑
R2 D4

$$11. \frac{8\cancel{x}}{6x^2(x-4)} \cdot \frac{8(x-4)}{\cancel{16}x} = \frac{8}{12x^2} = \boxed{\frac{2}{3x^2}}$$

4. the asymptotes are
left 1 & down 3

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

↑ ↑
L1 D3

$$10. \frac{x}{x-4} - \frac{12}{(x-4)(x-1)}$$

$$= \frac{x(x-1)}{(x-4)(x-1)} - \frac{12}{(x-4)(x-1)}$$

$$= \frac{x^2 - x - 12}{(x-4)(x-1)}$$

$$= \frac{(x-4)(x+3)}{(x-4)(x-1)}$$

$$= \boxed{\frac{x+3}{x-1}}$$