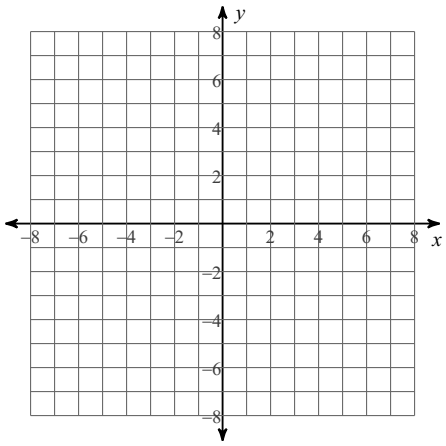
Algebra 2 Name_____ ID: 1

Practice Test (Rationals)

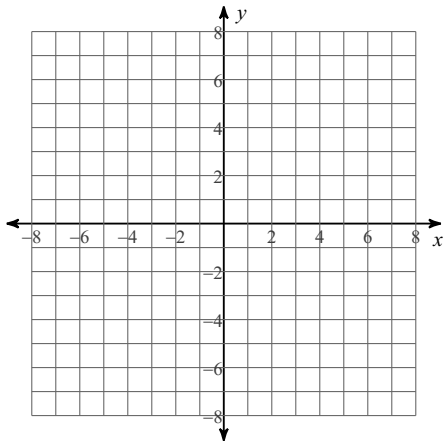
Date_____ Period____

Graph each function.

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

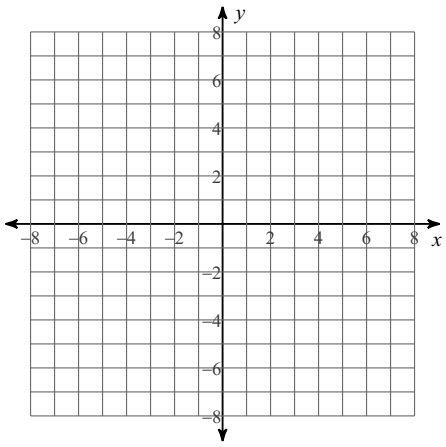


2) $f(x) = -\frac{4}{x+2} + 1$

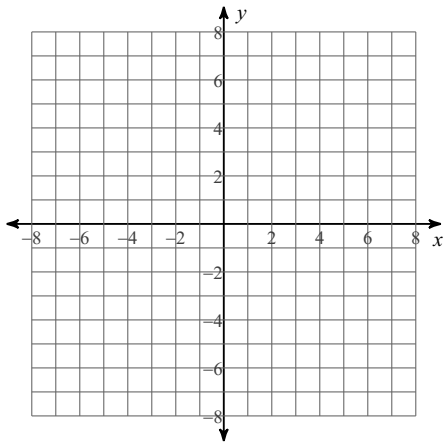


Identify the holes, vertical asymptotes, and horizontal asymptote of each. Then sketch the graph.

3) $f(x) = \frac{x-2}{-4x^2+24x-32}$



4) $f(x) = \frac{-3x^2+9x}{x^2-2x-3}$



Simplify each and state the excluded values.

5) $\dfrac{64}{56a + 24}$

6) $\dfrac{6p^2 + 36p}{p + 6}$

7) $\dfrac{n^2 + n - 12}{6n + 24}$

8) $\dfrac{a^2 + a - 56}{a^2 - 13a + 42}$

9) $\dfrac{7n^2 + n - 8}{9n^3 - 21n^2 + 12n}$

10) $\dfrac{5v^2 - 48v + 27}{2v^2 - 14v - 36}$

Simplify each expression.

11) $\dfrac{6m^2}{10m^2} \cdot \dfrac{11m}{19}$

12) $\dfrac{19}{4k} \cdot \dfrac{18k^2}{10k^3}$

13) $\dfrac{x - 2}{6x^2 - 12x} \div \dfrac{1}{7x}$

14) $\dfrac{1}{m - 8} \div \dfrac{8m^2}{m^2 - 7m - 8}$

Simplify each and state the excluded values.

15) $\dfrac{7p^2 - 48p + 36}{12p^2 - 54p} \cdot \dfrac{12p^2 - 54p}{42p - 36}$

16) $\dfrac{50n^3 + 100n^2}{50n + 100} \div \dfrac{n^2 + 2n - 80}{10}$

17) $\dfrac{5m^2 - 7m - 6}{45m + 27} \cdot \dfrac{3m + 6}{3m^2 - 18m - 48}$

Simplify each expression.

18) $\frac{2x-5}{3x+5}+\frac{2x}{4x}$

19) $\frac{6}{2v}-\frac{v-2}{2v^2+8v}$

20) $\frac{x+6}{x^2-7x-18}-\frac{2x}{x-9}$

Simplify each expression.

21) $\frac{2}{5n}-\frac{n+1}{n+8}$

22) $\frac{5}{5x}-\frac{3}{x+8}$

23) $\frac{x+4}{x^2-x-12}+\frac{2x}{x-4}$

Simplify each expression.

24) $\frac{\frac{x-5}{5x}+\frac{x-5}{x}}{\frac{x-5}{x}}$

25) $\frac{\frac{25}{x^2}-\frac{1}{x}}{\frac{2}{x}}$

Solve each equation. Remember to check for extraneous solutions.

26) $\frac{3n-2}{n^2}+\frac{n+3}{n^2}=\frac{1}{n}$

27) $\frac{v+3}{3v^2}+\frac{1}{3v^2}=\frac{5}{v^2}$

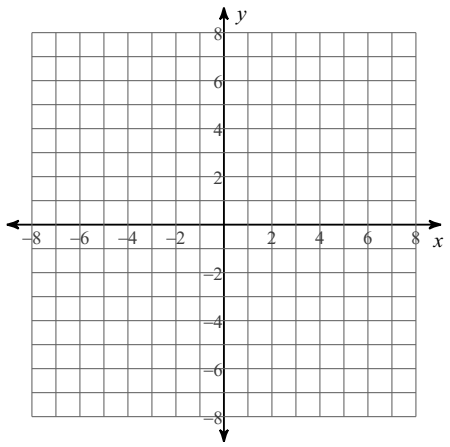
28) $\frac{1}{x+7} + \frac{1}{x^2+7x} = \frac{1}{2x^2+14x}$

29) $\frac{4}{k} = \frac{3}{k+8} - \frac{1}{k+8}$

30) $\frac{n+4}{n} + \frac{1}{n^2+4n} = \frac{n^2+10n+16}{n^2+4n}$

31) The change in temperature T of an aluminum wire varies inversely as its mass m and directly as the amount of heat energy E transferred. The temperature of an aluminum wire with a mass of 0.1 kg rises 5*C when 450 joules (J) of heat energy are transferred to it. How much heat energy must be transferred to an aluminum wire with a mass of 0.2 kg raise it temperature 20*C?

32) Given: y varies directly as x, and y = 14 when x=3.5. Write and graph the direct variation function.

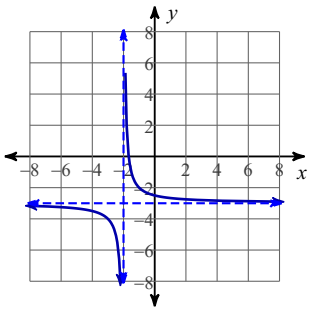


33) Given: y varies inversely as x, and y = 4 when x = 10. Find y when x = 6.

34) The number of Calories C in a horned melon varies directly as its weight w, and C = 25 Cal when w = 3.5 oz. How many Calories are in a horned melon weighing 12.35 oz? Round to the nearest Calorie.

Answers to Practice Test (Rationals) (ID: 1)

1)



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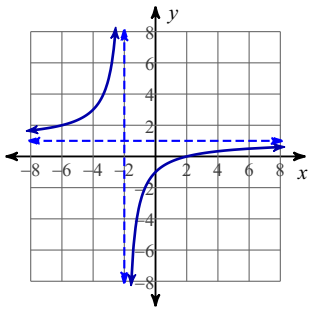
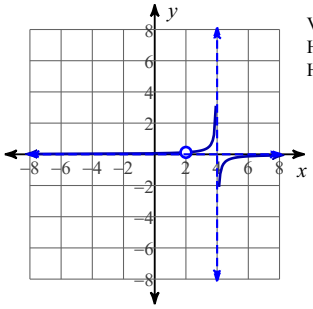
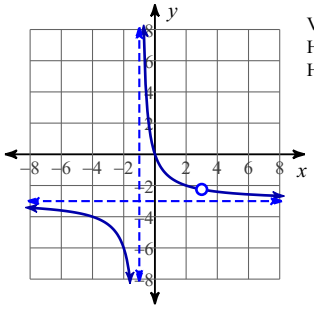


3)



Vertical Asym.: $x = 4$
Holes: $x = 2$
Horz. Asym.: $y = 0$

4)



Vertical Asym.: $x = -1$
Holes: $x = 3$
Horz. Asym.: $y = -3$

5) $\frac{8}{7a+3}$; $\left\{-\frac{3}{7}\right\}$

6) $6p$; $\{-6\}$

7) $\frac{n-3}{6}$; $\{-4\}$

8) $\frac{a+8}{a-6}$; $\{7, 6\}$

9) $\frac{7n+8}{3n(3n-4)}$; $\left\{0, 1, \frac{4}{3}\right\}$

10) $\frac{5v-3}{2(v+2)}$; $\{9, -2\}$

11) $\frac{33m}{95}$

12) $\frac{171}{20k^2}$

13) $\frac{7}{6}$

14) $\frac{m+1}{8m^2}$

15) $\frac{p-6}{6}$; $\left\{0, \frac{9}{2}, \frac{6}{7}\right\}$

16) $\frac{10n^2}{(n-8)(n+10)}$; $\{-2, 8, -10\}$

17) $\frac{m-2}{9(m-8)}$; $\left\{-\frac{3}{5}, 8, -2\right\}$

18) $\frac{7x-5}{2(3x+5)}$

19) $\frac{5v+26}{2v(v+4)}$

20)

21) $\frac{-3n+16-5n^2}{5n(n+8)}$

22) $\frac{-2x+8}{x(x+8)}$

23)

24) $\frac{6}{5}$

25) $\frac{25-x}{2x}$

26) $\left\{-\frac{1}{3}\right\}$

27) $\{11\}$

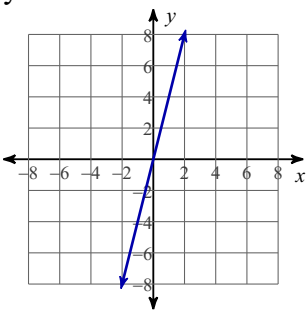
28) $\left\{-\frac{1}{2}\right\}$

29) $\{-16\}$

30) $\left\{\frac{1}{2}\right\}$

31) 3600 joules

32) y = 4x



33) y = 20/3

34) 88 Cal