Math Worksheets

Simplifying and Graphing Rational Expressions

✎ **Simplify.**

1) $\dfrac{x+3}{3x+9} =$

2) $\dfrac{3x^2+12x+12}{x+2} =$

3) $\dfrac{8}{4x-4} =$

4) $\dfrac{x^2+6x+5}{x^2+9x+20} =$

5) $\dfrac{16\ ^4}{24x} =$

6) $\dfrac{x-1}{x^2+4x-5} =$

7) $\dfrac{x^2-5x-14}{x-7} =$

8) $\dfrac{36}{6x-6} =$

✎ **Identify the points of discontinuity, holes, vertical asymptotes, x–intercepts, and horizontal asymptote of each.**

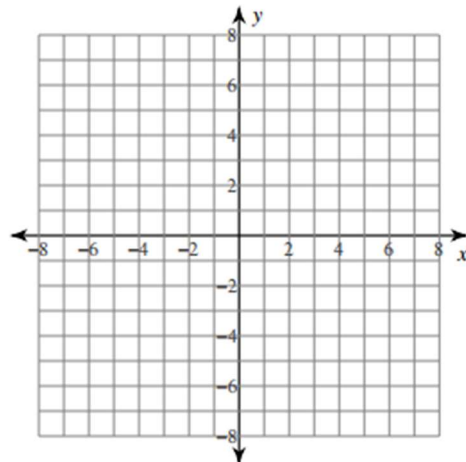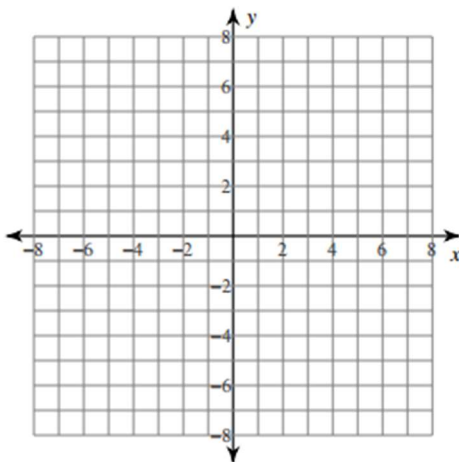9) $f(x) = \dfrac{x^2-x+2}{-4x^2-4x+8} =$

10) $f(x) = \dfrac{-x-2}{-3x^2-15x-18} =$

11) $f(x) = \dfrac{x-2}{x-7} =$

12) $f(x) = \dfrac{3x^2}{3x^2-3x-6} =$

✎ **Graph rational expressions.**

13) $f(x) = \dfrac{-x^2+3x-4}{x-3}$

14) $f(x) = \dfrac{-x^3-10x+32}{x^2-x-3}$

Answers of Worksheets

Simplifying and Graphing rational expressions

1) $\frac{1}{3}$

2) $3(x + 2)$

3) $\frac{2}{x-1}$

4) $\frac{x+1}{x+4}$

5) $\frac{2x^3}{3}$

6) $\frac{1}{x+5}$

7) $x + 2$

8) $\frac{6}{x-1}$

9) Discontinuities: –2, 1;   Vertical Asymptote: $x = -2, x = 1$;   Holes: None

   Horizontal. Asymptote: $y = -\frac{1}{4}$;   x–intercepts: None

10) Discontinuities –2, –3;   Vertical Asymptote $x = -3$;   Holes $x = -2$

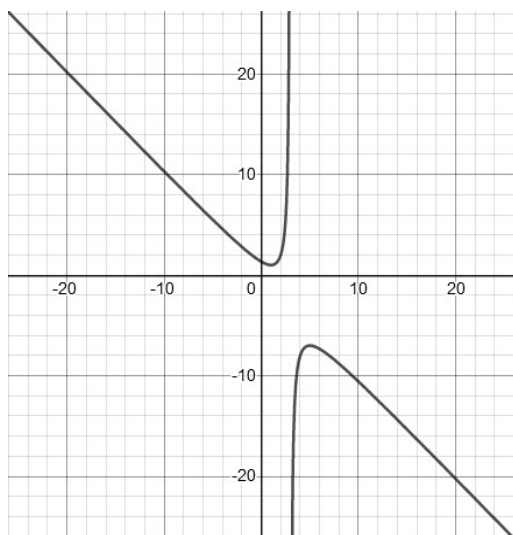   Horizontal Asymptote $y = 0$; x–intercepts. None

11) Discontinuities: 7;   Vertical Asymptote: $x = 7$;   Holes: None

   Horizontal Asymptote: $y = 1$;   x–intercepts: 2

12) Discontinuities: –1, 2;   Vertical Asymptote: $x = -1, x = 2$;   Holes: None

   Horizontal Asymptote: $y = 1$;   x–intercepts: 0

13)

14)