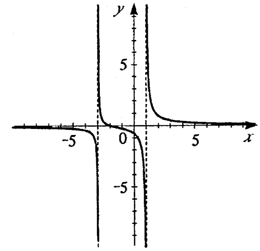
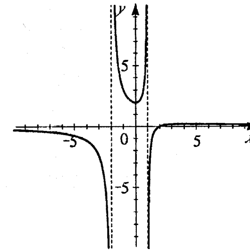
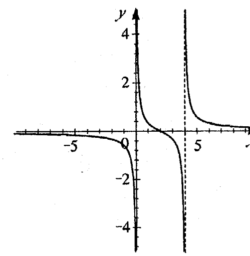
30. $s(x) = \dfrac{x+2}{(x+3)(x-1)}$. When $x = 0$, $y = \dfrac{2}{-3}$, so the y-intercept is $-\frac{2}{3}$. A vertical asymptote occurs when $(x+3)(x-1) = 0$ $\Leftrightarrow$ $x = -3$ and $x = 1$. Because the degree of the denominator is greater than the degree of the numerator, the horizontal asymptote is $y = 0$.



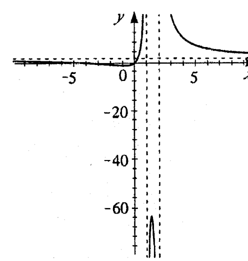
32. $s(x) = \dfrac{2x-4}{x^2+x-2} = \dfrac{2(x-2)}{(x-1)(x+2)}$. When $x = 0$, $y = 2$, so the y-intercept is 2. A vertical asymptote occurs when $(x-1)(x+2) = 0$ $\Leftrightarrow$ $x = 1$ and $x = -2$. Because the degree of the denominator is greater than the degree of the numerator, the horizontal asymptote is $y = 0$.



34. $t(x) = \dfrac{x-2}{x^2-4x} = \dfrac{x-2}{x(x-4)}$. Since $x = 0$ is not in the domain of $t(x)$, there is no y-intercept. A vertical asymptote occurs when $x(x-4) = 0$ $\Leftrightarrow$ $x = 0$ and $x = 4$. Because the degree of the denominator is greater than the degree of the numerator, the horizontal asymptote is $y = 0$.



36. $r(x) = \dfrac{2x(x+4)}{(x-1)(x-2)}$. When $x = 0$, we have $y = 0$, so the graph passes through the origin. Also, when $y = 0$, we have $2x(x+4) = 0$ $\Leftrightarrow$ $x = 0, -4$, so the x-intercepts are 0 and -4. There are two vertical asymptotes at $x = 1$ and $x = 2$. Because the degree of the denominator and numerator are the same, the horizontal asymptote is $y = \frac{2}{1} = 2$.



38. $r(x) = \dfrac{4x^2}{x^2-2x-3} = \dfrac{4x^2}{(x-3)(x+1)}$. When $x = 0$, we have $y = 0$, so the graph passes through the origin. Vertical asymptotes occur at $x = -1$, and $x = 3$. Because the degree of the denominator and numerator are the same, the horizontal asymptote is $y = \frac{4}{1} = 4$.