

$$\begin{aligned}
 a) \quad & \frac{25y}{4x^2} \div \frac{36y^8}{32x^5} \\
 & = \frac{25y}{4x^2} \cdot \frac{32x^5}{36y^8} \quad \left| \begin{array}{l} \text{npv} \\ x=0 \\ y=0 \end{array} \right. \\
 & = \frac{25}{36} \cdot \frac{32}{4} \cdot \frac{x^5}{x^2} \cdot \frac{y}{y^8} \\
 & = \frac{5}{9} \cdot 8 \cdot x^3 \cdot \frac{1}{y^7} \\
 & = \frac{40x^3}{9y^7}
 \end{aligned}$$

$$\begin{aligned}
 b) \quad & \frac{42x^2y^3}{-81x^4y^5} \div \frac{49x^4y^2}{18xy} \\
 & = \frac{42x^2y^3}{-81x^4y^5} \cdot \frac{18xy}{49x^4y^2} \quad \left| \begin{array}{l} \text{npv} \\ x=0 \\ y=0 \end{array} \right. \\
 & = \frac{42}{49} \cdot \frac{18}{-81} \cdot \frac{x^3}{x^8} \cdot \frac{y^4}{y^7} \\
 & = \frac{6}{7} \cdot \frac{-2}{9} \cdot \frac{1}{x^5} \cdot \frac{1}{y^3} \\
 & = \frac{-12}{63x^5y^3}
 \end{aligned}$$

$$\begin{aligned}
 c) \quad & \frac{x^2-3x-40}{14x+2} \div \frac{64-x^2}{7x+1} \\
 & = \frac{x^2-3x-40}{14x+2} \cdot \frac{7x+1}{64-x^2} \quad \left| \begin{array}{l} \text{npv} \\ x=-\frac{1}{2} \\ x=8 \\ x=-8 \end{array} \right. \\
 & = \frac{(x+5)(x-8)}{2(7x+1)} \cdot \frac{7x+1}{(8-x)(8+x)} \\
 & = \frac{-(x+5)}{2(8+x)}
 \end{aligned}$$

$$\begin{aligned}
 d) \quad & \frac{x^2-3x-18}{x^2+6x+9} \div \frac{x^2+3x+2}{x^2+8x+15} \\
 & = \frac{x^2-3x-18}{x^2+6x+9} \cdot \frac{x^2+8x+15}{x^2+3x+2} \\
 & = \frac{(x-6)(x+3)}{(x+3)(x+3)} \cdot \frac{(x+3)(x+5)}{(x+2)(x+1)} \quad \left| \begin{array}{l} \text{npv} \\ x=-3 \\ x=-2 \\ x=-1 \\ x=-5 \end{array} \right. \\
 & = \frac{(x-6)(x+5)}{(x+2)(x+1)}
 \end{aligned}$$

$$\begin{aligned}
 e) \quad & \frac{14a+6}{6a^2-20a} \div \frac{14a^2+13a+3}{6a^2-17a-10} \\
 & = \frac{14a+6}{6a^2-20a} \cdot \frac{6a^2-17a-10}{14a^2+13a+3} \quad \left| \begin{array}{l} \text{npv} \\ a=0 \\ a=\frac{10}{3} \\ a=-\frac{1}{2} \\ a=-\frac{3}{7} \end{array} \right. \\
 & = \frac{2(7a+3)}{2a(3a-10)} \cdot \frac{(3a-10)(2a+1)}{(2a+1)(7a+3)} \\
 & = \frac{1}{a}
 \end{aligned}$$