

2241

$$\begin{aligned}
 \text{a)} \quad \frac{4x^2 - 4x - 1}{5x - 10x^2} &= \frac{(2x)^2 - 2 \cdot 2x \cdot 1 - 1^2}{5x(1-2x)} \\
 &= \frac{(2x-1)^2}{5x(1-2x)} = \frac{(2x-1)^2}{-5x(2x-1)} = \frac{2x-1}{-5x} \\
 &= -\frac{2x-1}{5x} = \frac{1-2x}{5x}
 \end{aligned}$$

$$\begin{aligned}
 \text{b)} \quad \frac{(12-2x)^2}{x^2 - 12x + 36} &= \frac{(12-2x)(12-2x)}{x^2 - 2 \cdot 6 \cdot x + 6^2} = \frac{2(6-x)2(6-x)}{(x-6)^2} \\
 &= \frac{4(6-x)^2}{(x-6)(x-6)} = \frac{4(6-x)^2}{(-1)(6-x) \cdot (-1)(x-6)} = \frac{4(6-x)^2}{(6-x)^2} = 4
 \end{aligned}$$

$$\begin{aligned}
 \text{c)} \quad \frac{2x^3 - 8x}{4x^2 - 2x^3} &= \frac{2x(x^2 - 4)}{2x^2(2-x)} = \frac{2x(x^2 - 2^2)}{-2x^2(x-2)} \\
 &= \frac{2x(x+2)(x-2)}{-2x^2(x-2)} = -\frac{x+2}{x}
 \end{aligned}$$

$$\begin{aligned}
 \text{d)} \quad \frac{1-x^2}{(x-1)^2} &= \frac{(1-x)(1+x)}{(x-1)^2} = -\frac{(x-1)(x+1)}{(x-1)^2} \\
 &= -\frac{x+1}{x-1} = \frac{x+1}{-(x-1)} = \frac{x+1}{1-x}
 \end{aligned}$$