(1) Let x = the amt of time (in hours) to finish the job working together.

Then,

$$\frac{1}{7}x + \frac{1}{4}x = 1 \qquad \text{LCD} = 28$$

METHOD 1

$$(28)\left(\tfrac{1}{7}x\right) + (28)\left(\tfrac{1}{4}x\right) = (28)(1)$$

$$4x + 7x = 28$$

$$\boxed{x = \frac{28}{11} \text{ hrs}}$$

(2) $$\frac{2x-1}{x^2-3x+2} - \frac{x+1}{x^2-6x+8} \qquad \text{LCD} = (x-1)(x-2)(x-4)$$

$$(x-2)(x-1) \qquad (x-2)(x-4)$$

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

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

$$= \frac{2x^2-9x+4 - (x^2-1)}{\text{LCD}} = \frac{2x^2-9x+4-x^2+1}{\text{LCD}}$$

$$= \boxed{\frac{x^2-9x+5}{(x-1)(x-2)(x-4)}}$$

(3) $$\boxed{y = \frac{kxz}{w^2}}$$

(4) Let x = speed of boat in still water (mph)

Then

	up	down
d	36	54
r	$x-3$	$x+3$
t	t	t

$$t = \frac{36}{x-3} = \frac{54}{x+3}$$

$$36(x+3) = 54(x-3)$$

$$36x + 108 = 54x - 162$$

$$-18x = -270$$

$$x = \frac{-270}{-18} = \frac{9 \cdot 30}{9 \cdot 2}$$

$$x = \frac{-30}{-2}$$

$$\boxed{x = 15 \text{ mph}}$$

$$7x^3 + 14x^2 - 105x$$

$$= 7x(x^2 + 2x - 15)$$

$$= 7x(x+5)(x-3) \longrightarrow \text{Domain of}$$

$$\frac{x+13}{7x^3 + 14x^2 - 105x} \text{ is } \boxed{\{x \mid x \neq 0, x \neq -5 \text{ & } x \neq 3\}}$$