Factorising, Algebraic Fraction and Formulae - Section Test (Answers)

1) $2x^2y - xy + 2xy^2 = xy\,(2x - 1 + 2y)$

2) $8x^2y^3 - 4x^3y^4 - 2x^2y = 2x^2y\left(4y^2 - 2xy^3 - 1\right)$

3)

$$\frac{y^2-1}{y^2-y-2} = \frac{\cancel{(y+1)}(y-1)}{(y-2)\cancel{(y+1)}} = \frac{y-1}{y-2}$$

4)

$$\frac{2x}{3y^3} \times \frac{6y}{x^2+2x} = \frac{2x}{3y^3} \times \frac{6y}{x(x+2)}$$

$$= \frac{2\cancel{x}}{\cancel{3}y^{\cancel{2}2}} \times \frac{^{2}\cancel{6}\,\cancel{y}}{\cancel{x}(x+2)}$$

$$= \frac{4}{y^2(x+2)}$$

5)

$$\frac{x^2y}{2z} \div \frac{3xy^3}{10z^2} = \frac{x^2y}{2z} \times \frac{10z^2}{3xy^3}$$

$$= \frac{x^{\cancel{2}}\,\cancel{y}}{\cancel{2}\,\cancel{z}} \times \frac{^{5}\cancel{10}z^{\cancel{2}}}{3\cancel{x}y^{\cancel{3}2}}$$

$$= \frac{5xz}{3y^2}$$

6)

The common denominator is $(x+2)(2x-1)$

$$\frac{5}{x+2} - \frac{3}{2x-1} = \frac{5(2x-1)-3(x+2)}{(x+2)(2x-1)}$$

$$= \frac{10x-5-3x-6}{(x+2)(2x-1)}$$

$$= \frac{7x-11}{(x+2)(2x-1)}$$

7)

$$a = \frac{1}{3}(b-2)$$
$$\Rightarrow 3a = b-2$$
$$\Rightarrow b = 3a+2$$

8)

$$s = \tfrac{1}{2}(u+v)t$$
$$2s = (u+v)t$$
$$\frac{2s}{t} = u+v$$
$$\frac{2s}{t} - v = u$$
$$u = \frac{2s}{t} - v$$

9)

$$g = \frac{1}{\sqrt{a^2-x^2}}$$
$$g\sqrt{a^2-x^2} = 1$$
$$\sqrt{a^2-x^2} = \frac{1}{g}$$
$$a^2 - x^2 = \frac{1}{g^2}$$
$$a^2 = \frac{1}{g^2} + x^2$$
$$a^2 - \frac{1}{g^2} = x^2$$
$$x = \sqrt{a^2 - \frac{1}{g^2}}$$

10)

$$b = \frac{a+x}{a+c}$$
$$b(a+c) = a+x$$
$$ab+bc = a+x$$
$$ab = a+x-bc$$
$$ab-a = x-bc$$
$$a(b-1) = x-bc$$
$$a = \frac{x-bc}{b-1}$$