

1) Simplify the expression:

a) $(x+1)^2 - (x-2)^2$

d) $\frac{3a^3}{2b^2} \times \frac{-b}{a} \div \frac{-b^2}{(-2a)^2}$

f) $\frac{3}{8x} - \frac{4}{3x} + \frac{5}{6x}$

b) $(w-1)(w^2 + 2w + 9)$

g) $\frac{3}{x-1} - \frac{2}{x^2-1}$

c) $5x - (3y - 2(x - y - 3(2-x)))$

e) $\frac{3x}{4} - \frac{x+2}{3} + \frac{5}{6}$

2) Solve the equation:

a) $x - \frac{x-3}{4} + 1 = 0$

d) $\frac{3}{v} = 2 - \frac{2}{v-1}$

b) $6a^2 + 11a = 10$

e) $(x-5)^4 = 256$

c) $\frac{6}{d} = -\frac{d^2}{36}$

f) Solve simultaneously
 $2a + 3b - 8 = 0$
 $5a + 7b = 21$

3) Express with a rational denominator:

a) $\frac{2\sqrt{3}}{\sqrt{8}}$

b) $\frac{3\sqrt{5}+5}{\sqrt{5}}$

c) $\frac{2\sqrt{2}}{4+\sqrt{3}}$

4) Evaluate:

a) $128^{\frac{2}{7}}$

b) $\frac{125^{\frac{1}{3}}}{2^{-2}}$

5) Simplify, answer in index form.

a) $\frac{p^{\frac{5}{2}} \times p^{\frac{3}{2}}}{p^{-1}}$

b) $\frac{1}{\sqrt{x^3}}$

6) Simplify, answer in index form.

a) $\frac{2x}{\sqrt[3]{x^2}}$

b) $\left(\sqrt{x} - \frac{4}{\sqrt{x^3}}\right)^2$

7) A straight line is divided into two parts, the first being $(3x-4)$ cm long, and the other $(5x-2)$ cm long.

If the first part is one-third of the length of the whole line, find the length of the whole line in cm.

8) If $w = \sqrt{6Rh - 3h^2}$, find w if $R = 33.8$, $h = \frac{1}{10}$.