

$$\frac{x^2 + 4x - 5}{x^2 + x - 2}$$

$$\text{b } \frac{9x^2 - 1}{3x^2 + 11x - 4}$$

$$\text{c } \frac{2x^2 - x - 1}{2x^2 + x}$$

Multiply:

$$\frac{x}{3} \times \frac{y}{5}$$

$$\text{b } \frac{x}{2y} \times \frac{3y}{2x}$$

$$\text{c } 2k \times \frac{5}{3k}$$

$$\text{d } \frac{x+2}{x} \times \frac{3}{x+2}$$

Divide:

$$\frac{3x}{7y} \div \frac{2x}{5y}$$

$$\text{b } \frac{4a}{b^2c} \div \frac{2a^2}{bc^2}$$

$$\text{c } k \div \frac{1}{k}$$

$$\text{d } \frac{x-1}{x+1} \div \frac{x^2-1}{x}$$

Add:

$$\text{a } \frac{x}{5} + \frac{x}{7}$$

$$\text{b } \frac{g}{3} + \frac{5}{g}$$

$$\text{c } \frac{3}{m} + \frac{4}{n}$$

$$\text{d } \frac{2}{x+1} + \frac{3}{x-1}$$

$$\text{e } x + \frac{1}{x}$$

Subtract:

$$\text{a } \frac{a}{3} - \frac{a}{7}$$

$$\text{b } \frac{1}{x} - \frac{1}{y}$$

$$\text{c } \frac{3}{x} - 4$$

$$\text{d } \frac{1}{x-1} - \frac{1}{x+1}$$

$$\text{e } g - \frac{2}{g}$$

Simplify, expressing your answers with positive indices:

$$x^9 \times x^6$$

$$\text{b } 2x^8 \times 6x^5$$

$$\text{c } \frac{6x^8}{2x^5}$$

$$\text{d } \frac{x^7}{x^8}$$

$$\text{e } 6x^{-8}$$

$$\frac{5x}{x^6}$$

$$\text{g } (2x^2)^3$$

$$\text{h } (x^2)^{-3}$$

$$\text{i } \frac{3}{2x^{-3}}$$

$$\text{j } (3x^0)^4$$

$$243^{-\frac{3}{5}}$$

$$\text{l } x^{\frac{2}{3}}(x^{\frac{1}{2}} + x^{\frac{1}{4}})$$

$$\text{m } 2x^4(3x^{-3} + 2x^{\frac{1}{2}})$$

Simplify these surds:

$$\sqrt{250}$$

$$\text{b } \sqrt{32}$$

$$\text{c } \sqrt{147}$$

$$\text{d } \sqrt{150} + \sqrt{24}$$

$$\sqrt{125} - 3\sqrt{50}$$

$$\text{f } \frac{\sqrt{50}}{\sqrt{94}}$$

$$\text{g } \sqrt{3}(\sqrt{8} - 2\sqrt{3})$$

$$\text{h } 2\sqrt{5}(3\sqrt{5} - \sqrt{50})$$

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