

(C1-1.1) Name:

Homework Questions 1 – Simplifying Like Terms

Simplify the following like terms

a) $5x + 3x$

b) $3x - 2x + 6x$

c) $6y + 2x + 3y - x$

d) $3x + 2x^2 + 7x + 9x^2 - x$

e) $3x + 4x - 2x$

f) $5y + 4x - 2x + 3y$

g) $2x^2 - 3xy - 4xy + 5x^2$

h) $2ac + 3ac^2 + 4ac^2$

i) $4(4xy - 3x + xy)$

j) $2(12xy^2 - 3xy) - (xy^2 + 2xy)$

(C1-1.2) Name:

Homework Questions 2 – Simplifying Using Laws of Indices

1. Simplify the following like terms

a) $x^4 \times x^2$

b) $5y^4 \times 3y^6$

c) $2x^3y^5 \times 6x^3y^4$

d) $12x^6 \div 4x^3$

e) $20x^7y^4 \div 5x^4y^3$

f) $\frac{30x^3y^2z^5}{10x^4y^3z^6}$

g) $(2a)^3$

h) $(3x^2)^3$

i) $\left(\frac{4x^3}{3}\right)^2$

j) $\left(\frac{2x^2y^4}{5z^3}\right)^3$

(C1-1.3) Name:

Homework Questions 3 – Expanding Brackets

1. Simplify the following by removing the single brackets

a) $4(x + 6)$

b) $x(x + 1)$

c) $5(x - 2) - 3(x + 6)$

d) $2x(x - 3) + 7x^2 + 5x$

e) $6yx^2 - 5xy(2x + 3y)$

f) $2x^2y^3(3x + 4y) + 5x^2(y^3 - y^4)$

2. Expand and simplify the following quadratics fully

a) $(x - 2)(x - 4)$

b) $3(x + 4)(x - 2)$

c) $(x + 4)^2$

d) $(x - 3)^2 - 2x(x + 4)$

(C1-1.4) Name:

Homework Questions 4 – Factorising an Expression

1. Factorize the following into a single bracket

a) $4x - 8$

b) $14x - 7$

c) $x + 3x^2$

d) $14x - 4x^2$

e) $16x^2 + 24xy^3$

f) $14x^3y^2 - 7xy^3 + 28xy^5$

g) $12x^3 + 6x^2$

h) $25x^3 - 15x^2 + 35x^5$

i) $3x^2 - 6x$

j) $4x^2 - 2x^2y$

(C1-1.5) Name:

Homework Questions 5 – Factorising a Quadratic

1. Factorize the following quadratic equations into double brackets

a) $x^2 + 10x + 24$

b) $x^2 + x - 30$

c) $x^2 - 11x + 28$

2. Factorize the following quadratic equations using the difference of two squares

a) $x^2 - 49$

b) $169 - y^2$

c) $4x^2 - 9y^2$

d) $25x^2y^2 - 36x^2$

3. Factorize the following quadratic equations

a) $4x^2 + 12x + 9$

b) $3x^2 - 10x - 8$

c) $5x^2 + 28x + 15$

(C1-1.6) Name:

Homework Questions 6 – Laws of Indices for Rational Exponents

1. Write the following indices as a fraction

a) 4^{-2}

b) 3^{-4}

c) $\left(\frac{a^3}{y^2}\right)^{-3}$

d) $\left(\frac{3x^5y^2}{2z^4}\right)^{-2}$

2. Write the following indices as roots

a) $4^{\frac{2}{3}}$

b) $3^{\frac{5}{4}}$

c) $5^{-\frac{2}{3}}$

d) $6^{-\frac{6}{5}}$

3. Write the following roots as indices

a) $\sqrt[4]{x^5}$

b) $\frac{2}{\sqrt[3]{x^4}}$

c) $\frac{1}{\sqrt[10]{y^4}}$

d) $\sqrt[3]{x}$

4. Evaluate the following

a) $16^{\frac{1}{4}}$

b) $64^{\frac{1}{3}}$

c) $8^{\frac{2}{3}}$

d) $49^{\frac{3}{2}}$

e) $81^{\frac{1}{4}}$

f) $\left(\frac{1}{25}\right)^{-\frac{1}{2}}$

g) $\left(\frac{36}{49}\right)^{-\frac{3}{2}}$

h) $\left(\frac{125}{8}\right)^{-\frac{2}{3}}$

(C1-1.7) Name:

Homework Questions 7 – Manipulating Surds

1. Simplify the following surds

a) $\sqrt{48}$

b) $\sqrt{75}$

c) $\sqrt{147}$

d) $\sqrt{1575}$

2. Write the following surds as simply as possible

a) $2\sqrt{12}$

b) $4\sqrt{24}$

c) $5\sqrt{18}$

d) $2\sqrt{27}$

3. Simplify the following surds

a) $\sqrt{5} + 3\sqrt{5} + 6\sqrt{5}$

b) $5\sqrt{2} + 7\sqrt{2} - 4\sqrt{2} + 5\sqrt{2}$

c) $\sqrt{28} + \sqrt{63} - \sqrt{112}$

d) $\sqrt{50} - \sqrt{72} + \sqrt{18} - \sqrt{32}$

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

f) $\frac{\sqrt{6}}{\sqrt{2}}$

g) $\frac{5\sqrt{24}}{2\sqrt{50}}$

(C1-1.8) Name:

Homework Questions 8 – Rationalising the Denominator

1. Rationalise the denominators on the following expressions

a) $\frac{\sqrt{5}}{\sqrt{20}}$

b) $\frac{2\sqrt{10}}{\sqrt{125}}$

c) $\frac{12\sqrt{12}}{8\sqrt{6}}$

d) $\frac{3\sqrt{18}}{4\sqrt{24}}$

e) $\frac{2\sqrt{8}}{6\sqrt{6}}$

f) $\frac{4}{8 + \sqrt{20}}$

g) $\frac{\sqrt{10} + \sqrt{50}}{\sqrt{5}}$

h) $\frac{\sqrt{12} + \sqrt{20}}{\sqrt{5}}$

i) $\frac{\sqrt{6}}{\sqrt{5} + \sqrt{2}}$

j) $\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} + \sqrt{2}}$

