A Algebra: Factorising algebraic expressions

Factorise the following:

1 $6ab - 2a$ 2 $3a^2b + 4a$ 3 $5a^2 + 10a$

4 $9ay + 2xy - y$ 5 $D^2 - C^2$ 6 $25x^2 - y^2$

7 $98a^2b^4 - 2$ 8 $(x - 2y)^2 - (x + y)^2$ 9 $x^2 - 3x - 4$

10 $x^2 - x - 6$ 11 $2x^2 - 5x - 12$ 12 $5x^2 + 9x - 2$

13 $ax - 2a + bx - 2b$ 14 $2ax - 2bx + a - b$ 15 $ab - ac + b - c$

16 $2ab - 8a - 3b + 12$

B Algebra: Solving simple linear equations

Solve these equations for x:

1 $x + 3.8 = -12.4$ 2 $2x = 15.02$ 3 $\dfrac{x}{3} = 6.2$

4 $x - 2.1 = 6.8$ 5 $\dfrac{3x}{2} = 21.3$ 6 $4x + 1 = 21$

7 $6x - 1 = 15$ 8 $\dfrac{x + 4}{2} = -9$ 9 $\dfrac{x + 4}{3} = -12$

10 $2(x + 3) = 6$ 11 $7(x - 4) = 21$ 12 $\dfrac{-3(x + 1)}{5} = 18$

13 $\dfrac{x - 6}{3} = -11$ 14 $3.8(x + 2) = 11.4$ 15 $8(x - 4.02) = 20$

C Indices: Dividing index expressions

Simplify:

1 $x^5 \div x^2$ 2 $ax^4 \div ax^3$ 3 $a^4b^5 \div a^3b^2$

4 $x^{13} \div 3x^2y^4$ 5 $5a^2b^3 \div 10ab$ 6 $7a^4b^5 \div 21ab$

7 $21a^2b^3 \div 7a^4b^6$ 8 $27a^4b^{11} \div 2ab^{16}$ 9 $-15a^4b^3 \div 3ab^{10}$

10 $25a^4b^{16} \div 2ab^{15}$ 11 $12ab \div 24a^2b^4$ 12 $360a^4b^8 \div 45a^4b^6$

D Indices: Multiplying and dividing terms containing indices

Simplify:

1 $\dfrac{3a^4b^9}{2ab^3} \times \dfrac{a^4b}{6a}$ 2 $\dfrac{12a^4b^{10}}{7a^3} \times \dfrac{5ab^4}{9a^4}$ 3 $\dfrac{5a^4b^3}{10a^5b} \times \dfrac{9ab^8}{2a}$

4 $\dfrac{5a^4}{2b^3} \div \dfrac{a^6}{b^4} \times \dfrac{6a}{b}$ 5 $\dfrac{16a^5}{7b} \times \dfrac{9a^2b}{2b} \div \dfrac{3b}{4a}$ 6 $\dfrac{3ab^2}{4b^6} \div \dfrac{8a^2b^4}{5a^4}$

7 $\dfrac{19a^4}{6b^3} \times \dfrac{2a^4b}{3ab^5}$ 8 $\dfrac{17a^4b^3}{2a^9b} \div \dfrac{a^4}{b^7} \times \dfrac{3}{2b}$ 9 $\dfrac{16a^4b}{9ab^4} \div \dfrac{4a}{12b} \times \dfrac{6a}{7b}$

E Cartesian plane: Graphing inequations
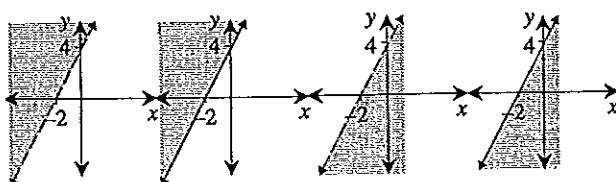
1 Sketch the line $y = 2x + 4$ and show the regions of the graph:
  (a) $y > 2x + 4$ (b) $y \ge 2x + 4$ (c) $y < 2x + 4$ (d) $y \le 2x + 4$

2 Sketch the line $y = -3$ and show these regions:
  (a) $y > -3$ (b) $y \ge -3$ (c) $y < -3$ (d) $y \le -3$

A
1. $2a(3b-1)$
2. $a(3ab+4)$
3. $5a(a+2)$
4. $y(9a+2x-1)$
5. $(D-C)(D+C)$
6. $(5x-y)(5x+y)$
7. $2(7ab^2-1)(7ab^2+1)$
8. $-3y(2x-y)$
9. $(x-4)(x+1)$
10. $(x+2)(x-3)$
11. $(2x+3)(x-4)$
12. $(5x-1)(x+2)$
13. $(a+b)(x-2)$
14. $(2x+1)(a-b)$
15. $(a+1)(b-c)$
16. $(2a-3)(b-4)$

B
1. -16.2
2. 7.51
3. 18.6
4. 8.9
5. 14.2
6. 5
7. $2\frac{2}{3}$
8. -22
9. -40
10. 0
11. 7
12. -31
13. -27
14. 1
15. 6.52

C
1. x^3
2. x
3. ab^3
4. $\dfrac{x^{11}}{3y^4}$
5. $\dfrac{ab^2}{2}$
6. $\dfrac{a^3b^4}{3}$
7. $\dfrac{3}{a^2b^3}$
8. $\dfrac{27a^3}{2b^5}$
9. $-\dfrac{5a^3}{b^7}$
10. $\dfrac{25a^3b}{2}$
11. $\dfrac{1}{2ab^3}$
12. $8b^2$

D
1. $\dfrac{a^7b^7}{4}$
2. $\dfrac{20b^{14}}{21a^2}$
3. $\dfrac{9b^{10}}{4a}$
4. $\dfrac{15}{a}$
5. $\dfrac{96a^8}{7b^2}$
6. $\dfrac{15a^3}{32b^8}$
7. $\dfrac{19a^7}{9b^7}$
8. $\dfrac{51b^8}{4a^9}$
9. $\dfrac{32a^3}{7b^3}$

E 1 (a)   (b)   (c)   (d)

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