

Two mark questions

- Calculate:
(a) $\sqrt{666}$ (b) $\sqrt{-101}$
- Does $x = 8$ satisfy $3(x + 5) = 39$?
- The world's largest sheep ranch is located in Australia. There are three times as many sheep as kangaroos on the ranch, for a total of 87,000 animals. How many sheep are there on this ranch?
- Trevor enjoys a good party, like the one last night. He thinks he had 8 beers and 24 smokes. The smokes to beers ratio is what?
- Combine and simplify:
(a) $(3x^2)(5x^4)$ (b) $\frac{25x^5}{5x^{25}}$
(c) $(x^{-2})^4$ (d) $(4x^3 + 2x - 7) - (3x + 11)$
(e) $4x^2(3x^2 - 9x + 11)$ (f) $(4x - 7)(3x + 11)$

Three mark questions

- Combine and simplify:
(a) $(x^2 - 5x + 4)(x^2 + 3x + 1)$ (b) $\frac{x}{2x - 1} + \frac{3}{x + 2}$
(c) $\left(\frac{6x + 4}{x^2 - 4}\right)\left(\frac{3x + 6}{3x + 2}\right)$ (d) $\frac{\left(\frac{x^2 + x}{x - 3}\right)}{\left(\frac{x^2 + 3x}{x^2 - 9}\right)}$
(e) $\sqrt{8} + \sqrt{18}$
- Rationalize the denominator:
(a) $\frac{10}{\sqrt{2}}$ (b) $\frac{5}{1 + \sqrt{2}}$
- Solve for x : $(x + 2) + 3 = x + 7$.

- Find x : $6(x - 3) - 5 = 25$.
- Suppose $T = 7h + kw$. Solve this formula for w .
- Find x : $\frac{1}{x + 2} = \frac{3}{4x + 1}$.
- Solve for x : $\frac{1}{x + 3} + \frac{3}{8} = \frac{1}{x - 3}$.
- Divide using long division: $\frac{x^2 + 4x - 5}{x + 3}$
- Factor as much as possible:
(a) $12x^2 - 8x$ (b) $x^2 - 6x + 8$
(c) $4x^3 - 4x$ (d) $x^2 + 7x + 15$
- Simplify by factoring out squares, if you can: $\sqrt{25y^4}$
- Sketch the graph of $y = 4x - 3$.
- What is the slope of $y = 5x + 11$?
- Find the equation of the line through $(2, 4)$ with slope 6?
- What is the equation of the line through $(3, 4)$ and $(-1, 8)$.
- Draw the graphs of $x + y = 6$ and $2x - y = 9$ on one sheet. Indicate where they cross.
- Solve for x and y :
$$\begin{array}{rcl} 3x + 2y & = & 14 \\ 2x + 5y & = & 24 \end{array}$$
- Find x : $x^2 - 11x + 18 = 0$.
- Solve for x : $5x^2 = 9x + 1$.

ANSWERS

- (a) 25.8070 (b) The expression is undefined.
- yes
- 65, 250
- 3 to 1
- (a) $15x^6$ (b) $\frac{x^{20}}{1}$ (c) $\frac{x^8}{1}$ (d) $4x^3 - x - 18$
(e) $12x^4 - 36x^3 + 44x^2$ (f) $12x^2 + 23x - 77$
- (a) $x^4 - 2x^3 - 10x^2 + 7x + 4$ (b) $\frac{x^2 + 8x - 3}{6}$ (c) $\frac{x(x + 2)}{x - 2}$ (d) $x + 1$
(e) $5\sqrt{2}$ (f) $5\sqrt{2}$
- (a) $5\sqrt{2}$ (b) $-5 + 5\sqrt{2}$
- There is no solution.
- $\frac{k}{T - 7h}$
- 8
17. 5
18. $y = 6x - 8$
16. The straight line crosses the x-axis at $(\frac{3}{4}, 0)$, and the y-axis at $(0, -3)$.
15. $5y^2$
14. (a) $4x(3x - 2)$ (b) $(x - 2)(x - 4)$ (c) $4x(x + 1)(x - 1)$ (d) $x^2 + 7x + 15$ (It's already prime.)
13. $x + 1 - \frac{x + 3}{8}$
12. 5 or -5
11. 5
20. The straight lines cross at the point $(5, 1)$.
19. $y = -x + 7$
21. $x = 2, y = 4$
22. $x = 9, 2$
23. $x \approx 1.9050, -0.1050$