$$4x^{-\frac{1}{2}} + 12 + 9x^{\frac{1}{2}}$$

Simplify

$$(64x^2)^{-\frac{1}{3}} \div 4x^{-\frac{2}{3}}$$

A

$$k - 7k^2$$

Simplify

$$\frac{(2 - 3\sqrt{x})^2}{\sqrt{x}}$$

B

$$x^3 - 8x^2 + 21x - 27$$

The graph $y = x^3 - 2x^2 + x - 6$ is translated by vector $\begin{bmatrix} 2 \\ 3 \end{bmatrix}$. Find the equation of the resulting curve y_1

C

$$4x^{-\frac{1}{2}} - 12 + 9x^{\frac{1}{2}}$$

Solve simultaneously

$$x^2 + y^2 - x + 2y = 0$$

$$x + y = -1$$

D

$$x^3 + 4x^2 + 5x - 1$$

Find the minimum value of the function

$$f(x) = 2x^2 - 8kx + k^2 + k$$

E

$$x < -\frac{2}{3} \quad or \quad x > \frac{1}{4}$$

Simplify

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

F

$$9x^{-\frac{1}{2}} - 12 + 4x^{\frac{1}{2}}$$

The graph $y = x^3 - 2x^2 + x - 6$ is translated by vector $\begin{bmatrix} -2 \\ 3 \end{bmatrix}$. Find the equation of the resulting curve y_1

G

$x = -4 \;\; y = \;\; -18$ $\qquad$ $x = 5 \;\; y = 18$

Find the range of values of k such that

$$(3k - 5)x^2 + 12x + k + 6 = 0$$

has 2 distinct real roots

H

$x = 3 \;\; y = -1$ $\quad\quad$ $x = -1 \;\; y = 3$

Solve

$$12x^2 + 5x > 2$$

1

$$x < -\frac{1}{4} \quad or \quad x > \frac{3}{4}$$

Simplify

$$(64x^2)^{-\frac{2}{3}} \times \frac{1}{4} x^{-\frac{1}{3}}$$

J

$x = 1 \;\; y = -2$ $\qquad$ $x = -\frac{1}{2} \;\; y = -\frac{1}{2}$

Solve

$$16x^2 - 8x - 3 > 0$$

K

$$-10 < x < 5$$

Solve simultaneously

$$x^2 + y^2 - xy = 13$$

$$x + y = 2$$

L

$$x < -\frac{5}{2} \quad or \quad x > -\frac{9}{4}$$

The graph $y = x^3 - 2x^2 + x - 6$ is translated by vector $\begin{bmatrix} 2 \\ -3 \end{bmatrix}$. Find the equation of the resulting curve

M

1

Find the range of values of k such that

$$kx^2 + kx + x + k = 0$$

has 2 distinct real roots

N

$$-7\frac{1}{3} < x < 3$$

Find the minimum value of the function

$$f(x) = 2x^2 - 8kx + k$$

0

$$\frac{1}{16}$$

Solve simultaneously

$$y = x^2 + 3x - 22$$

$$y = 4x - 2$$

P

$$-\frac{1}{3} < x < 1$$

Solve

$$8x^2 + 38x + 45 > 0$$

Q

$$x^3 - 8x^2 + 21x - 21$$

Simplify

$$\frac{\left(2 + 3\sqrt{x}\right)^2}{\sqrt{x}}$$

R

$$\frac{1}{64}x^{-\frac{5}{3}}$$

Simplify

$$(64x^{-2})^{-\frac{1}{3}} \times 4x^{-\frac{2}{3}}$$

S

$k - 8k^2$

Find the range of values of k such that

$$(k + 7)x^2 + 12x + k - 2 = 0$$

has 2 distinct real roots

T

AS LEVEL Treasure Hunt