

Twenty-One Today
NUMBER 2
Solutions

Answer 1

78

Answer 2

$$\frac{dy}{dx} = 12x^2 + 5$$

Answer 3

$$f'(-2) = 3$$

Answer 4

Only one-to-one functions have an inverse.

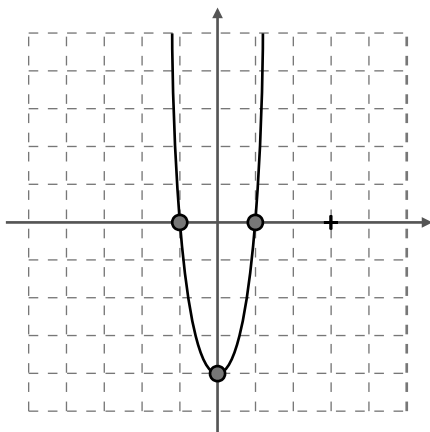
$f(x)$ is NOT one-to-one

Answer 5

(i) $g(x) = \frac{2x - 3}{x + 1}$

(ii) $g^{-1}(x) = \frac{x + 3}{2 - x}$

Answer 6



On y-axis : $(0, -16)$

On x-axis : $(-4, 0)$ and $(4, 0)$

Answer 7

$$x < -4 \text{ or } x > 4$$

Answer 8

$$2.5$$

Answer 9

$$k = 35$$

Answer 10

$$-4$$

Answer 11

Consider the discriminant, D

$$D = 0 \quad \text{gives equal roots}$$

$$b^2 - 4ac = 0$$

$$(2k)^2 - 4 \times 1 \times (4k) = 0$$

$$4k^2 - 16k = 0$$

$$4k(k - 4) = 0$$

$$\text{Either } k = 0 \quad \text{or} \quad k = 4$$

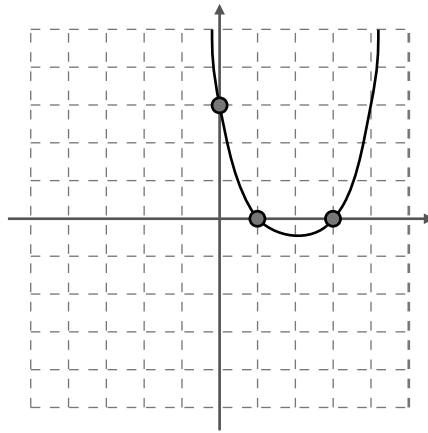
$$\text{Reject } k = 0 \text{ as told } k \text{ is Non zero} \quad \therefore k = 4$$

Answer 12

(i) 10

(ii) $0.6i + 0.8j$

Answer 13



On y-axis : (0, 3)

On x-axis : (1, 0) and (3, 0)

Answer 14

$$\begin{aligned}\text{LHS} &= \frac{3x^2 + 4\sqrt{x}}{2x} \\ &= \frac{3x^2}{2x} + \frac{4x^{\frac{1}{2}}}{2x} \\ &= 1.5x + 2x^{-\frac{1}{2}} \\ &= \text{RHS} \quad \square\end{aligned}$$

Answer 15

$$g'9(x) = 1.5 - x^{-\frac{3}{2}}$$

Answer 16

$$x = -6, y = -13$$

Answer 17

$$\begin{aligned}
 U_n &= a + (n - 1) d \\
 213 &= 4 + (n - 1) \times 11 \\
 n - 1 &= \frac{209}{11} \\
 n &= 20
 \end{aligned}$$

$$\begin{aligned}
 \text{Sum} &= \frac{1}{2} n (a + l) \\
 &= \frac{20}{2} (4 + 213) \\
 &= 10 \times 217 \\
 &= 2170
 \end{aligned}$$

Answer 18

$$\begin{aligned}
 0 + 3 + 8 + 15 \\
 = 26
 \end{aligned}$$

Answer 19

$$c = 2$$

Answer 20

$$k = 4.5$$

Answer 21

$$\begin{aligned}
 x^2 + (2x - 5)^2 &= 25 \\
 x^2 + 4x^2 - 20x + 25 &= 25 \\
 5x^2 - 20x &= 0 \\
 5x(x - 4) &= 0 \\
 x = 0 \quad \text{or} \quad x &= 4
 \end{aligned}$$

Thus, the solutions are, $(0, -5)$ or $(4, 3)$