If $2^x = 2\frac{1}{2}$ and $2^y = 3$, then 2^{x+y} is equal to

(a) 6.5.

(b) 7.5.

(c) 5.5.

(d) 1.5.

(e) $2^{5.5}$.

The surd $\dfrac{1}{\sqrt{a}+\sqrt{b}}$ can be written as

1. $\dfrac{\sqrt{a}-\sqrt{b}}{a-b}$
2. $\sqrt{a}+\sqrt{b}$
3. $\dfrac{\sqrt{a}+\sqrt{b}}{a+b}$
4. $\sqrt{a}-\sqrt{b}$
5. $\dfrac{1}{\sqrt{a}}+\dfrac{1}{\sqrt{b}}$

If $\ln a = 7$ and $\ln b = 14$; evaluate:
$\ln\left[(ab)^2\right]$

(a) 4

(b) $7^2 \cdot 14^2$

(c) $(21)^2$

(d) 42

(e) $2\ln(98)$

$(x-1)^2-(2x)^2$ equals

(a) $(-x-1)^2$

(b) $-3x^2-1$

(c) x^2-4x-1

(d) $(x+1)(1-3x)$

(e) None of the above

$\dfrac{3}{x^2-4} - \dfrac{2}{x^2-3x+2}$ written as a single fraction is

1. $\dfrac{1}{-2-3x}$
2. $\dfrac{x-7}{(x-2)(x+2)(x-1)}$
3. $\dfrac{5x+1}{(x^2-4)(x^2-3x+2)}$
4. $\dfrac{5x+1}{(x^2-4)(x-1)}$
5. $\dfrac{1}{(x^2-4)(x^2-3x+2)}$

If $f(x) = \begin{cases} -2x & \text{if } x < -1. \\ x+3 & \text{if } -1 \leq x \leq 3, \\ 6 & \text{if } x > 3 \end{cases}$ then

$f(-3) + f(0) + f(5)$ is equal to

(a) 2

(b) 3

(c) 6

(d) 15

(e) 17

Find the roots of the quadratic:
$x^2 + 1 = 5x$

1. $\dfrac{-5 \pm \sqrt{21}}{2}$
2. $\dfrac{5 \pm \sqrt{21}}{2}$
3. $\dfrac{5 \pm \sqrt{29}}{2}$
4. $\dfrac{-5 \pm \sqrt{29}}{2}$
5. $-\dfrac{1}{5}, 5$

The value of x that makes the equality $4^{x+1} = \frac{1}{8}$ true is

(a) all x

(b) $x = -\frac{5}{2}$

(c) $x = 2$

(d) $x = -2$

(e) $x = \log_2 8$

If $\sin\theta = \dfrac{1}{3}$ and $\tan\theta < 0$ then $\cos\theta$ is equal to

(a) $\dfrac{1}{3}$

(b) $\dfrac{-3}{\sqrt{10}}$

(c) $\dfrac{-1}{2\sqrt{2}}$

(d) $\dfrac{-2\sqrt{2}}{3}$

(e) $\dfrac{1}{\sqrt{10}}$