Question 1

1 point   Simplify as much as possible the expression $\dfrac{(x^4 y^{1/4})^{1/2}}{y^{1/2}}$. Answer : $\boxed{x^2 y^{-3/8}}$

Question 2

1 point   Simplify $\dfrac{x+1}{x-2} + \dfrac{x+1}{x-3} + \dfrac{-9x+21}{x^2-5x+6}$. Answer : $\boxed{\dfrac{2(x-4)}{(x-3)}}$

Question 3

1 point   If $y = \sqrt[4]{\dfrac{2x+3}{5}}$, write x as a fuction of y. Answer : $\boxed{x = (5y^4 - 3)/2}$

Question 4

1 point   Using long division, write $\dfrac{x^3 + 2x^2 + x + 3}{x+2}$ in the form $p(x) + r(x)/q(x)$ with the degree of r smaller than the degree of q.
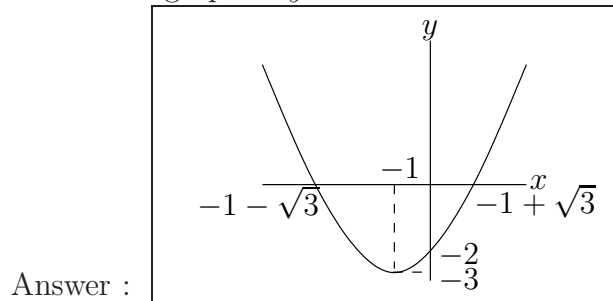Answer : $\boxed{x^2 + 1 + \frac{1}{x+2}}$

Question 5

1 point   Find the roots of the polynomial $x^2 + 2x - 2$ (i.e. solve $x^2 + 2x - 2 = 0$).
Answer : $\boxed{-1 \pm \sqrt{3}}$

Question 6

1 point   Sketch the graph of $y = x^2 + 2x - 2$. Don't forget to indicate the intersection with the axes.
Answer :

Question 7

1 point   Find the value of c in the polynomial $4x^2 - 12x + c$ such that the roots are equal.
Answer : $\boxed{c = 9}$

Question 8

1 point   Find the values of x such that $x^2 - 4x + 3 > 0$. Answer : $\boxed{x < 1 \text{ or } x > 3}$

Question 9

1 point   Find the values of x such that $\dfrac{2}{x+1} > \dfrac{1}{x-3}$. Answer : $\boxed{-1 < x < 3 \text{ and } x > 7}$

Question 10

1 point   Find the domain of the function $y = f(x) = \left(\dfrac{2x+7}{3}\right)^{-1/2}$.

Answer ; $\boxed{x > -7/2}$

Question 11

1 point   Find the range of the function $y = f(x) = 3 + 2x - x^2$.
Answer : $\boxed{x \le 4}$

Question 12

1 point Find the simplest form of $(f \circ g)(x)$, where $f(x) = \sqrt{x^2 - 1}$ and $g(x) = \sqrt{x^2 + 1}$.

Answer : $\boxed{(f \circ g)(x) = |x|}$

Question 13

1 point Find the value of x such that $|x^2 - 4| = 4$. Answer : $\boxed{0 \text{ or } \pm 2\sqrt{2}}$

Question 14

1 point Find the values of x such that $\log_{10}(100^x) = 3$. Answer : $\boxed{3/2}$
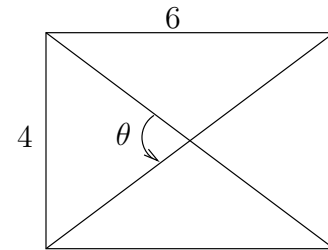
Question 15

1 point Find the values of x such that $e^x + 2e^{-x} = 3$. Answer : $\boxed{x = 0 \text{ and } x = \ln(2)}$

Question 16

1 point Find the values of x such that $\ln(2) - \ln(x) = \ln(3 - x)$. Answer : $\boxed{x = 1 \text{ and } x = 2}$

Question 17

1 point Find the cosinus of the angle θ in the following figure.

Answer : $\boxed{\dfrac{5}{13}}$

Question 18

1 point If $\cos(\theta) = 1/2$, find all possible values of $\sin(\theta)$. Answer : $\boxed{\pm \dfrac{\sqrt{3}}{2}}$

Question 19

1 point If $\sin(\theta) = \dfrac{1}{x}$, find $\tan(\theta)$. Answer : $\boxed{\pm \dfrac{1}{\sqrt{x^2 - 1}}}$

Question 20

1 point Find the slope of the line $5x + 7y + 5 = 0$. Answer : $\boxed{-\dfrac{5}{7}}$

Question 21

1 point If $x + y = 2$ and $2x - 3y = 1$, find x and y. Answer : $\boxed{x = \dfrac{7}{5} \text{ and } y = \dfrac{3}{5}}$