Question 1

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

Question 2

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

Question 3

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

Question 4

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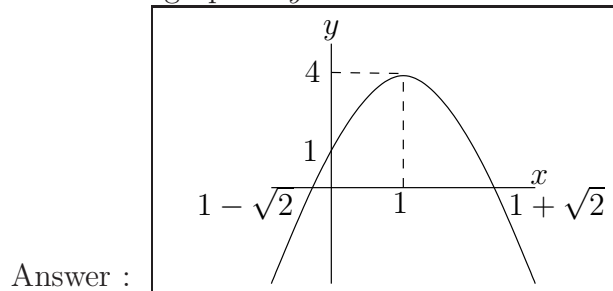
Answer : $\boxed{x^2 + 1 - \frac{3}{x+2}}$

Question 5

1 point   Find the roots of the polynomial $-x^2 + 2x + 1$ (i.e. solve $-x^2 + 2x + 1 = 0$).

Answer : $\boxed{1 \pm \sqrt{2}}$

Question 6

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

Answer :

Question 7

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

Question 8

1 point   Find the values of x such that $x^2 - 6x + 8 > 0$. Answer : $\boxed{x < 2 \text{ or } x > 4}$

Question 9

1 point   Find the values of x such that $\dfrac{3}{x+1} > \dfrac{2}{x-2}$. Answer : $\boxed{-1 < x < 2 \text{ and } x > 8}$

Question 10

1 point   Find the domain of the function $y = f(x) = \left(\dfrac{2x-5}{3}\right)^{-1/2}$.

Answer ; $\boxed{x > 5/2}$

Question 11

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

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 $|x^2 - 3| = 3$. Answer : $\boxed{0 \text{ or } \pm\sqrt{6}}$

Question 14

1 point Find the values of x such that $\log_5(25^x) = 7$. Answer : $\boxed{7/2}$

Question 15

1 point Find the values of x such that $e^x + 3e^{-x} = 4$. Answer : $\boxed{x = 0 \text{ and } x = \ln(3)}$

Question 16

1 point Find the values of x such that $\ln(6) - \ln(x) = \ln(5 - x)$. Answer : $\boxed{x = 2 \text{ and } x = 3}$

Question 17

1 point Find the sinus of the angle θ in the following figure.
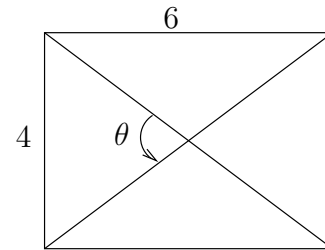
Answer : $\boxed{\dfrac{12}{13}}$

Question 18

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

Question 19

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

Question 20

1 point Find the slope of the line $7x + 5y + 4 = 0$. Answer : $\boxed{-\dfrac{7}{5}}$

Question 21

1 point If $2x + y = 2$ and $x - 3y = 2$, find x and y. Answer : $\boxed{x = \dfrac{6}{7} \text{ and } y = \dfrac{2}{7}}$