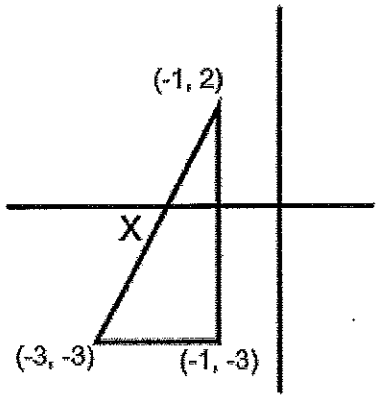
1.) What is the sum of the solutions to $2x^2 + 5x - 3 = 0$?

2.) If $f(x) = x^2 + x + 2$, then $f(x + 3) =$

3.) Simplify $(2x^2 + 3x - 6) + (x^2 - 18x + 6)$

4.) Solve $\frac{6}{\sqrt{x^2+4}} = 2$

5.) Given triangle ABC with $A(-3, -3), B(-1,2)$. Find $\overline{AB}$.



6.) If $f(x) = kx^2 - 4$ and $f(4) = 4$, What is f(6)?

7.) $f(x) = x^2 + 1$ and $g(x) = x^2 - 1$, what is $f(g(x))$?

8.) $f(x) = 3x + 6$ and $g(x) = \frac{x}{2}$, what is $f(g(6))$?

9.) $f(x) = x^2 + 3$ and $g(x) = x - 2$, Find $g(f(3))$

10.) $f(x) = x^3 - 4$ and $g(x) = -x^2 + 7$, Find $f(-2) + g(3)$

11.) Evaluate $\log_5 125$

12.) Expand $\log(x^2\sqrt[3]{5})$

13.) Simplify $3x\sqrt{8x} - 4\sqrt{x^3} + 3x\sqrt{72x}$ if x = 2

14.) if $\frac{6}{\sqrt{x^2+4}} = 2$ then $x^2 = ?$

15.) Simplify $\frac{10x^2 + 5x}{5x} = ?$

16.) If 1/3 is subtracted from 3 times the reciprocal of a certain number the result is 4. Write the equation.

17.) Solve for x, if $x + a - k = 0$

18.) $x^2 = ?, if\ \frac{6}{\sqrt{x^2+4}} = 2$

19.) Write the verbal equivalence to $\frac{3}{x} - \frac{1}{3} = 4$

20.) If $x + y = 4$, find the slope of the line.

21.) Simplify $2i(4 - 6i)$

22.) If $x^2 = 27x^{\frac{2}{3}}$, then $x = ?$

23.) $(3, 5)$ is a point on a function, what point is on the inverse function?

24.) Simplify $\frac{6!}{2!3!}$

25.) If $wc = T - 0.8ws, and\ T = 16, wc = 0$, find ws?

26.) If $x^2 + 8x + k = 0$, find k if $x = 2$.

27.) Factor $6a^2b^2 - 10a^2b^2 - 4ab^4$

28.) Find y if $x = -2$ for $y = 3x^2 - 4x - 10$

29.) Simplify $\sqrt{18}\sqrt{2}$

30.) If $A = P(1 + r)$, find r if $A = 82.5$ and $P = 75$

32.) Simplify and then Factor: $(2x^2 + 3x - 6) + (x^2 - 18x + 6)$

33.) Factor Completely: $36x^4 - 8x^3 - 28x^2$

34.) Simplify. Write answer as a fractional exponents. $\sqrt[3]{27xy^2z}$

35.) When $x = 2$, Find $3x\sqrt{8x} - 4\sqrt{x^3} + 3x\sqrt{72x}$

36.) Expand: $(2 + \sqrt{3})(3 - \sqrt{3})$

37.) Find the slope of $5x - y = 3$

38.) Lemonade is water and juice. How much water must be added to 10L of juice so the mixture is 90% juice?

39.) Bruce reads "x" pages a day, Carmen reads _____ pages a day more than Bruce. It take Bruce 12 full days to read the book, Carmen takes 10 full days to read the book. How many pages a day does Bruce read?

40.) The sum of 3 complex numbers is $20 + 5i$.
The sum of 2 complex numbers is $15 + 7i$.
What is the 3rd number?

Other Topics

SOH CAH TOA

Solving Right Triangles
Parallel Lines
Slope
Geometric Sequence (Find Common Ratio)

1 $2x^2 + 5x - 3 = 0$

-6, 6, -1, 5

$2x^2 + 6x - 1x - 3 = 0$

$(2x^2 + 6x) + (-1x - 3) = 0$

$2x(x+3) - 1(x+3) = 0$

$(x+3)(2x-1) = 0$

$x+3 = 0 \quad 2x-1 = 0$

$x = -3 \quad x = 1/2$

SUM

$-3 + \frac{1}{2}$

$-\frac{6}{2} + \frac{1}{2}$

$\boxed{\frac{-5}{2}} = \boxed{-2.5}$

2 $f(x) = x^2 + x + 2 \qquad f(x+3) =$

$f(x+3) = (x+3)^2 + x + 3 + 2$

$= (x+3)(x+3) + x + 3 + 2$

$= x^2 + 3x + 3x + 9 + x + 3 + 2$

$\boxed{= x^2 + 7x + 14}$

3 $(2x^2 + 3x - 6) + (x^2 - 18x + 6)$

$\boxed{= 3x^2 - 15x}$ OR $\boxed{= 3x(x-5)}$

4 $\frac{6}{\sqrt{x^2+4}} = \frac{2}{1}$ * CROSS MULTIPLY (PROPORTION)

$2\sqrt{x^2+4} = 6$

$\sqrt{x^2+4} = 3$ * SQUARE BOTH SIDES

$x^2 + 4 = 9$

$x^2 = 5$

$\boxed{x = \pm\sqrt{5}}$

5 FIND $\overline{AB}$ $A(-3,-3)$ $B(-1,2)$ $C(-1,-3)$

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

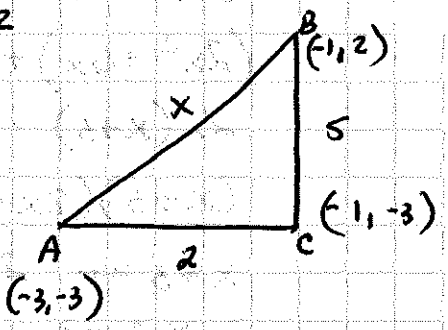
$d = \sqrt{(-1-(-3))^2 + (2-(-3))^2}$

$d = \sqrt{(2)^2 + (5)^2}$

$d = \sqrt{4+25}$

$\boxed{d = \sqrt{29}}$

PYTHAGOREAN THM OR



$A^2 + B^2 = C^2$

$(2)^2 + (5)^2 = C^2$

$4 + 25 = C^2$

$29 = C^2$

$\sqrt{29} = C$

6 $f(x) = kx^2 - 4$, $f(4) = 4$, FIND $f(6)$

$4 = k(4)^2 - 4$

$8 = k(16)$

$1/2 = k$

$f(x) = \frac{1}{2}x^2 - 4$

$f(6) = \frac{1}{2}(6)^2 - 4$

$f(6) = \frac{1}{2}(36) - 4$

$f(6) = 18 - 4$

$\boxed{f(6) = 14}$

7 $f(x) = x^2 + 1$ $g(x) = x^2 - 1$ $f(g(x))$

$f(g(x)) = x^2 + 1$

$= (\quad)^2 + 1$

$= (x^2-1)^2 + 1$

$= (x^2-1)(x^2-1) + 1$

$= x^4 - x^2 - x^2 + 1 + 1$

$\boxed{f(g(x)) = x^4 - 2x^2 + 2}$

8 $f(x) = 3x+6$ $\quad g(x) = \frac{x}{2}$, $f(g(6))$

$g(6) = \frac{6}{2}$

$g(6) = 3$

$f(g(6)) =$

$f(3) = 3x+6$

$= 3(3)+6$

$= 9+6$

$\boxed{f(g(6)) = 15}$

9 $f(x) = x^2+3$ $\quad g(x) = x-2$, $g(f(3))$

$f(3) = x^2+3$

$= (3)^2+3$

$= 9+3$

$f(3) = 12$

$g(f(3)) =$

$g(12) = x-2$

$= (12)-2$

$\boxed{g(f(3)) = 10}$

10 $f(x) = x^3-4$ $\quad g(x) = -x^2+7$, $f(-2)+g(3)$

$f(-2) = (-2)^3-4$

$= -8-4$

$f(-2) = -12$

$g(3) = -(3)^2+7$

$= -9+7$

$g(3) = -2$

$-12+(-2)$

$\boxed{-14}$

11 $\log_5 125 \longrightarrow 5^x = 125$

$\boxed{x = 3}$

12 EXPAND $\log(x^2\sqrt[3]{5})$

$\log x^2 + \log \sqrt[3]{5}$

$\log x^2 + \log (5)^{1/3}$

$\boxed{2 \log x + 1/3 \log 5}$

13 $3x\sqrt{8x} - 4\sqrt{x^3} + 3x\sqrt{72x}$ IF $x = 2$

$3(2)\sqrt{8(2)} - 4\sqrt{(2)^3} + 3(2)\sqrt{72(2)}$

$6\sqrt{16} - 4\sqrt{8} + 6\sqrt{144}$

$6(4) - 4\sqrt{4}\sqrt{2} + 6(12)$

$24 - 4(2)\sqrt{2} + 72$

$\boxed{96 - 8\sqrt{2}}$

14 $\dfrac{6}{\sqrt{x^2+4}} = 2$

SEE WORK FOR # 4

$x = \pm\sqrt{5}$

$x^2 = ?$

$x^2 = (\pm\sqrt{5})^2 = 5$

$\boxed{x^2 = 5}$

15 $\dfrac{10x^2 + 5x}{5x}$

$\dfrac{5x(2x+1)}{5x}$

$\boxed{2x+1}$

16 $\boxed{3\left(\frac{1}{x}\right) - \frac{1}{3} = 4}$ OR $\boxed{\frac{3}{x} - \frac{1}{3} = 4}$

17 SOLVE FOR x, IF $x + a - k = 0$

$x + a - k = 0$

$+k \quad +k$

$x + a = k$

$-a \quad -a$

$\boxed{x = k - a}$

18 SEE #4 OR #14

19 SEE # 16

20 FIND SLOPE. $x + y = 4$

$x + y = 4$

$-x \quad -x$

$y = -x + 4$

$\boxed{m = -1}$

21 $2i(4 - 6i)$

$8i - 12i^2$

$8i - 12(-1)$

$\boxed{8i + 12}$

23 INVERSE → $(5, 3)$

24 $\frac{6!}{2!\,3!} = \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{(2 \cdot 1)(3 \cdot 2 \cdot 1)} = \frac{120}{2} = \boxed{60}$

25 $wc = T - 0.8ws$

$0 = 16 - 0.8ws$

$\frac{-16}{-0.8} = \frac{-0.8ws}{-0.8}$

$\boxed{ws = 20}$

26 $x^2 + 8x + K = 0$ FIND K IF $x = 2$

$(2)^2 + 8(2) + K = 0$

$4 + 16 + K = 0$

$20 + K = 0$

$\boxed{K = -20}$

27 FACTOR: $6A^2B^2 - 10A^2B^2 - 4AB^4$

$\boxed{2AB^2(3A - 5A - 2B^2)}$

28 $y = 3x^2 - 4x - 10$ FIND y IF $x = -2$

$y = 3(-2)^2 - 4(-2) - 10$

$y = 3(4) + 8 - 10$

$y = 12 + 8 - 10$

$\boxed{y = 10}$

29 $\sqrt{18} \cdot \sqrt{2}$

$\sqrt{36}$

$\boxed{6}$

30 $A = P(1 + R)$ FIND R IF $A = 82.5$ $P = 75$

$\frac{75}{82.5} = \frac{82.5(1 + R)}{82.5}$

$\frac{75}{82.5} = 1 + R$

$-1 \quad -1$

$\frac{75}{82.5} - 1 = R$

$\boxed{R = -0.091 \text{ OR } \frac{-1}{11}}$

32 SIMPLIFY THEN FACTOR

$(2x^2 + 3x - 6) + (x^2 - 18x + 6)$

$3x^2 - 15x$: SIMPLIFIED

$\boxed{3x(x-5)}$ FACTORED

33 FACTOR: $36x^4 - 8x^3 - 28x^2$

$4x^2(9x^2 - 2x - 7)$

$4x^2[9x^2 - 9x + 7x - 7]$

$4x^2[(9x^2 - 9x) + (7x - 7)]$

$4x^2[9x(x-1) + 7(x-1)]$

$\boxed{4x^2(x-1)(9x+7)}$

-63 / -9 × 7 / -2

34 $\sqrt[3]{27xy^2z}$

$3\sqrt[3]{xy^2z}$

$3(xy^2z)^{1/3}$

$\boxed{3x^{1/3}y^{2/3}z^{1/3}}$

35 SEE # 13

36 $(2+\sqrt{3})(3-\sqrt{3})$

$6 - 2\sqrt{3} + 3\sqrt{3} - \sqrt{9}$

$6 + \sqrt{3} - 3$

$\boxed{3+\sqrt{3}}$

37 FIND SLOPE

$5x - y = 3$

$-y = -5x + 3$

$y = 5x - 3$

$\boxed{m = 5}$

38 $\frac{9}{1} = \frac{10}{x}$

$9x = 10$

$x = \frac{10}{9}$

$\boxed{x = 1.11 \text{ L WATER}}$

39

40 $C = 3^{RD}$ COMPLEX #

$15 + 7i + C = 20 + 5i$

$\boxed{C = 5 - 2i}$