

- Calculator not allowed
- Show All work
- Simplify answers fully

Instructions : solve the equations. Some may have complex solutions!

① $7x + 4 = x + 16$

④ $2x^2 + 5x = -3$

1. _____

② $\frac{x+1}{3} = 5 - \frac{x+2}{7}$

⑤ $x^2 - 6x + 7 = 0$

2. _____

3. _____

4. _____

③ $x^2 + 6x - 7 = 0$

⑥ $6x^3 + 3x^2 + 8x + 4 = 0$

5. _____

6. _____

Instructions : Fully simplify the expressions so they contain positive exponents only

⑦ $3x^5 \cdot 5x^7$

⑩ $4x^{3/2} \cdot 4x^{1/2}$

7. _____

⑧ $(-2a^4b)^5$

⑪ $-(-3x)^4$

8. _____

9. _____

⑨ $\left(\frac{x^2y^3}{x^3y^2}\right)^{-3}$

⑫ $\left(\frac{k^{-4}}{k^{-5}}\right)^3$

10. _____

11. _____

12. _____

Instructions : Write the eq. of the line in point slope form w/ the given info ;

Instructions : state the

13. _____

the line in point slope form

domain of each function :

14. _____

w/ the given info ;

15. _____

⑬ Through the point (7, 4) w/ a slope of $-\frac{2}{3}$.

⑮ $G(x) = \frac{3(x-4)}{5(x-4)(x+2)}$

16. _____

⑭ Through points (1, 3) & (2, -4)

⑯ $L(x) = \frac{x^2 + 2x + 1}{6x^2 + x - 2}$

AP PRE-CALC : UNIT 0 STUDY GUIDE SOLUTIONS

① $7x + 4 = x + 16$

$6x = 12$

$x = 2$

② $21 \left(\frac{x+1}{3} \right) = 21 \left(5 - \frac{x+2}{7} \right)$

$7(x+1) = 105 - 3(x+2)$

$7x + 7 = 105 - 3x - 6$

$7x + 7 = 99 - 3x$

$10x = 92$

$x = 92/10 = 46/5$

~~$7x - 7 = -1$~~

③ $x^2 + 6x - 7 = 0$

$(x+7)(x-1) = 0$

$x = -7, 1$

~~$3x^2 + 6x + 2 = 5$~~

④ $2x^2 + 5x + 3 = 0$

$2x^2 + 2x + 3x + 3 = 0$

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

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

$x = -3/2, -1$

~~$NO \ 7 \ PE \ -6$~~

⑤ $x^2 - 6x + 7 = 0$

$x = \frac{6 \pm \sqrt{36 - 4(7)}}{2}$

$x = \frac{6 \pm \sqrt{8}}{2}$

$\sqrt{8} = \sqrt{4 \cdot 2}$

$= 2\sqrt{2}$

$x = \frac{6 \pm 2\sqrt{2}}{2} = 3 \pm \sqrt{2}$

2

⑥ $6x^3 + 3x^2 + 8x + 4 = 0$

$3x^2(2x+1) + 4(2x+1) = 0$

$(2x+1)(3x^2+4) = 0$

$\Rightarrow 3x^2 + 4 = 0$

$x^2 = -4/3$

$x = \pm \sqrt{-4/3} = \pm \sqrt{4 \cdot \sqrt{-1}} / \sqrt{3}$

$= \pm 2i / \sqrt{3} \cdot \sqrt{3} / \sqrt{3}$

$= \pm 2i\sqrt{3} / 3$

$\Rightarrow x = -1/2, \pm 2i\sqrt{3} / 3$

⑦ $3x^5 \cdot 5x^7$

$15x^{12}$

⑧ $(-2a^4 b)^5$

$-32a^{20} b^5$

⑨ $\left(\frac{x^2 y^3}{x^3 y^2} \right)^{-3}$

$= \left(\frac{y}{x} \right)^{-3} = \left(\frac{x}{y} \right)^3$

$= x^3 / y^3$

⑩ $4x^{3/2} \cdot 4x^{1/2}$

$16x^{3/2 + 1/2}$

$16x^{4/2}$

$16x^2$

⑪ $-(-3x)^4$

$-(81x^4) = -81x^4$

⑫ $\left(\frac{k^{-4}}{k^{-5}} \right)^3 = (k^{-4+5})^3 = k^3$

⑬ $y - y_1 = m(x - x_1)$

$y - 4 = -2/3(x - 7)$

⑭ $(x_1, y_1) = (1, 3)$ & $(x_2, y_2) = (2, -4)$

$m = \frac{-4 - 3}{2 - 1} = \frac{-7}{1} = -7$

$y - y_1 = m(x - x_1)$

$y - 3 = -7(x - 1)$

⑮ $G(x) = \frac{3(x-4)}{5(x-4)(x+2)}$

$x \neq -2, 4$

$x \neq -2, 4$

D: $(-\infty, -2) \cup (-2, 4) \cup (4, \infty)$

⑯ $L(x) = \frac{x^2 + 2x + 1}{6x^2 + x - 2}$

$\Rightarrow 6x^2 - 3x + 4x - 2$

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

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

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

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

D: All reals #'s where $x \neq 1/2, 3$
 $x \neq -2/3$