

Precalculus

Chapter P Test Review

Name _____

No graphing calculator
for questions 1 - 6!!

1. Find the distance between the points $(-8, 5)$ and $(3, 2)$...leave answer in radical form if needed.

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

$$\sqrt{(-8-3)^2 + (5-2)^2}$$

$$\sqrt{(-11)^2 + 3^2}$$

$$\sqrt{121+9}$$

$$\sqrt{130}$$

1. $\sqrt{130}$

2. Solve: $3(x + 2) = 5(2x - 3) - 7$

$$3x + 6 = 10x - 15 - 7$$

$$3x + 6 = 10x - 22$$

$$6 = 7x - 22$$

$$28 = 7x$$

$$4 = x$$

2. $x = 4$

3. Solve: $-1 < 4x - 1 \leq 11$

Write your solution in interval notation and graph it on the number line provided.

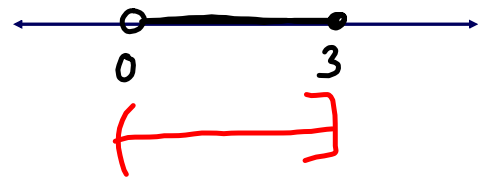
$$-1 < 4x - 1 \leq 11$$

$$\begin{array}{r} +1 \quad +1 \quad +1 \\ \hline \end{array}$$

$$\frac{0}{4} < \frac{4x}{4} \leq \frac{12}{4}$$

$$0 < x \leq 3$$

3. $(0, 3]$



4. Solve: $|2x + 3| \geq 1$ $(-\infty,] \cup [, \infty)$
Write your solution in interval notation.

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

$$\frac{2x}{2} \leq \frac{-4}{2}$$

$$x \leq -2$$

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

$$\frac{2x}{2} \geq \frac{-2}{2}$$

$$x \geq -1$$

5. Solve: $6x^2 - 4x + 5 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-(-4) \pm \sqrt{(-4)^2 - 4(6)5}}{2(6)}$$

$$\frac{4 \pm \sqrt{16 - 120}}{12}$$

$$\frac{4 \pm \sqrt{-104}}{12}$$

$$\frac{4 \pm \sqrt{104}i}{12}$$

$$\frac{4 \pm 2\sqrt{26}i}{12}$$

$$\frac{2 \pm \sqrt{26}i}{6}$$

6. _____

6. Write the complex number in standard form.

$$a + bi$$

$$\frac{(7 + 4i)(4 + 3i)}{(4 - 3i)(4 + 3i)}$$

$$\frac{28 + 21i + 16i + 12i^2}{4^2 - (3i)^2}$$

$$\frac{28 + 37i - 12}{16 - 9i^2}$$

$$\frac{16 + 37i}{16 - -9}$$

$$\frac{16 + 37i}{25}$$

=

$$\frac{16}{25} + \frac{37i}{25}$$

4. $(-\infty, -2] \cup [-1, \infty)$

$$\frac{\frac{1}{3} + \frac{\sqrt{26}i}{6}}{\frac{1}{3} - \frac{\sqrt{26}i}{6}}$$

$$\sqrt{104} = \sqrt{4} \sqrt{26}$$

$$2\sqrt{26}$$

$$12i^2 \quad i^2 = -1$$

$$12(-1)$$

$$-12$$

$$(\underline{1} + \underline{i}) + (\underline{3} - \underline{7i})$$

$$1 + 3 + i - 7i$$
$$4 - 6i$$

$$(2 - 3i) - (-i + 4)$$

$$\underline{2} - \underline{3i} + \underline{i} - \underline{4}$$

$$-2 - 2i$$

7. Find the equation of a line that contains (3, 4) and has a slope of 2.

Write the equation in point-slope form.

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

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

$$y - 4 = 2x - 6$$

7. _____

Slope-Intercept
 $y = 2x - 2$

8. Find the equation of a line that has x-int of 2 and y-int of -7.

Write the equation in slope-intercept form.

$(2, 0)$ $m = \frac{-7 - 0}{0 - 2} = \frac{-7}{-2} = \frac{7}{2}$
 $(0, -7)$
 x_1, y_1 x_2, y_2
 $y = \frac{7}{2}x - 7$

8. $y = \frac{7}{2}x - 7$

$$\begin{aligned} y &= mx + b \\ y &= mx - 7 \\ 0 &= m(2) - 7 \\ 0 &= 2m - 7 \\ +7 & \quad +7 \end{aligned}$$

9. Find the equation of a line that passes through (10, -3) and whose graph is perpendicular to the graph $y = 5x - 2$.

Write the equation in slope-intercept form.

$$y = \underline{m}x + \underline{b}$$

$$y = 5x - 2$$

m

$$y = -\frac{1}{5}x + b$$

$$-3 = -\frac{1}{5}(10) + b$$

$$\begin{aligned} -3 &= -2 + b \\ +2 & \quad +2 \\ \hline -1 &= b \end{aligned}$$

$$y = -\frac{1}{5}x - 1$$

$$\frac{7}{2} = \frac{2m}{2}$$

$$\frac{7}{2} = m$$

negative reciprocal

$$m = 5 \quad -\frac{1}{5}$$

10. Write the equation of the line that passes through the points (4, -10) and (-1, 5). _____

Write the equation in slope-intercept form.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-10)}{-1 - 4} = \frac{15}{-5} = -3$$

$$\begin{aligned} -10 &= (-3)(4) + b \\ -10 &= -12 + b \\ 2 &= b \end{aligned}$$

$$y = mx + b$$

$$5 = -3(-1) + b$$

$$5 = 3 + b$$

$$2 = b \checkmark$$

$$\boxed{y = -3x + 2}$$

11. In standard form, write the equation of a circle with center (2, -6) and radius 9. _____

h k

r

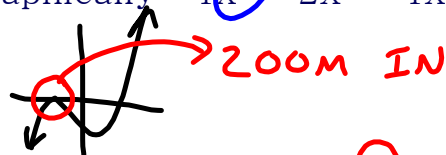
$$(x - h)^2 + (y - k)^2 = r^2$$

$$(x - 2)^2 + (y - (-6))^2 = 9^2$$

$$(x - 2)^2 + (y + 6)^2 = 81$$

12. Solve graphically: $4x^3 - 2x^2 - 4x - 1 = 0$

$$12. \frac{-1.5 \quad -0.366}{1.366}$$



13. Solve graphically: $x^2 - x - 6 \leq 0$
Express your solution in interval notation.

$$13. \boxed{[-2, 3]}$$

