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.

x_1, y_1 x_2, y_2

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

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

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

$\sqrt{121+9}$

$\sqrt{130}$

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.

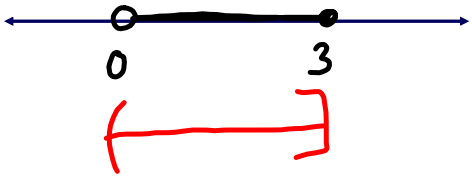
$-1 < 4x - 1 \leq 11$

$+1 \quad +1 \quad +1$

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

$0 < x \leq 3$

3. $(0, 3]$



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

$2x+3 \leq -1$
$-3 \quad -3$
$\frac{2x}{2} \leq \frac{-4}{2}$
$x \leq -2$

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

5. Solve: $6x^2 - 4x + 5 = 0$ 5. $\frac{1}{3}+\frac{\sqrt{26}i}{6} \quad \frac{1}{3}-\frac{\sqrt{26}i}{6}$

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

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

$\sqrt{-25} = \sqrt{-1}\sqrt{25}$
i
$= 5i$

$\frac{4 \pm \sqrt{-104}}{12}$ $\frac{4 \pm \sqrt{104}i}{12}$ $\frac{4 \pm 2\sqrt{26}i}{12}$

$\sqrt{104} = \sqrt{4}\sqrt{26}$
$2\sqrt{26}$

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

6. Write the complex number in standard form. $a+bi$

FOIL

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

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

$12i^2$ $i^2=-1$
$12(-1)$
-12

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

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

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

$(1+i)+(3-7i)$

$1+3+i-7i$

$4-6i$

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

$2-3i+i-4$

$-2-2i$

7. Find the equation of a line that contains (3, 4) and has a slope of 2.
Write the equation in point-slope form.

7. _____

x_1, y_1 m

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

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

$y - 4 = 2x - 6$

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.

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

b

$(2, 0)$ x_1, y_1

$(0, -7)$ x_2, y_2

$m = \frac{-7 - 0}{0 - 2} = \frac{-7}{-2} = \frac{7}{2}$

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

$y = mx + b$

$y = mx - 7$

$0 = m(2) - 7$

$0 = 2m - 7$

$+7 \quad +7$

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

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

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.

9. _____

x y

$y = 5x - 2$

m

negative reciprocal

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

$y = mx + b$

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

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

$-3 = -2 + b$

$+2 \quad +2$

$-1 = b$

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

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

x_1 y_1 x_2 y_2

$m = \frac{5 - -10}{-1 - 4} = \frac{15}{-5} = -3$

$-10 = (-3)4 + b$
$-10 = -12 + b$
$2 = b$ ✓

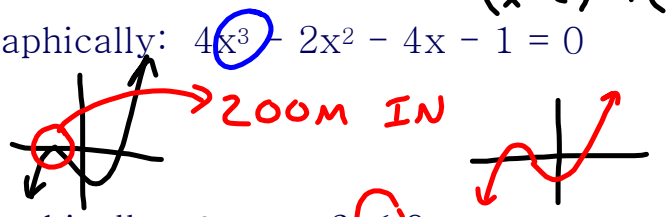
$y = mx + b$
$5 = -3(-1) + b$
$5 = 3 + b$
$2 = b$ ✓
$\boxed{y = -3x + 2}$

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

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. -.5 -.366 1.366



13. Solve graphically: $x^2 - x - 6 \leq 0$ 13. [-2, 3]
Express your solution in interval notation.