

# Chapter P5-P7 Practice Test

Pre-Calculus | Mr. Cooper

Name \_\_\_\_\_

Date \_\_\_\_\_

Period \_\_\_\_\_

Grade \_\_\_\_\_

Solve the following equations algebraically:

1.  $2x^2 + 11x - 21 = 0$

$(2x - 3)(x + 7) = 0$

$2x - 3 = 0$   
+3 +3

$2x = 3$

$x = \frac{3}{2}$

$x + 7 = 0$   
-7 -7

$x = -7$

3.  $6(3x + 1)^2 - 5 = 7$

+5 +5  
 $6(3x + 1)^2 = 12$   
6 6

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

$3x + 1 = \sqrt{2}$     $3x + 1 = -\sqrt{2}$

5.  $\left[\frac{x-2}{3} + \frac{x-5}{2} = \frac{1}{3}\right] (6)^{-1}$

$2(x-2) + 3(x-5) = 2$

$2x - 4 + 3x - 15 = 2$

$5x - 19 = 2$   
+19 +19

$\frac{5x}{5} = \frac{21}{5}$

$x = \frac{21}{5}$

7.  $8x^2 + 10x - 3 = 0$

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

$4x - 1 = 0$   
+1 +1

$4x = 1$

$x = \frac{1}{4}$

$2x + 3 = 0$   
-3 -3

$2x = -3$

$x = -\frac{3}{2}$

2.  $\sqrt{(4n - 1)^2} = 16$

$4n - 1 = \pm 4$  →  $4n - 1 = -4$   
+1 +1                    +1 +1

$4n = 5$

$n = \frac{5}{4}$

$4n = -3$

$n = -\frac{3}{4}$

4.  $3(3x - 1)^2 = 21$

$\sqrt{(3x - 1)^2} = \sqrt{7}$

$3x - 1 = \pm\sqrt{7}$   
+1 +1

$3x = 1 \pm \sqrt{7}$

$x = \frac{1 \pm \sqrt{7}}{3}$

6.  $x^2 + x + 11 = 5x - 8$   
-5x +8 -5x +8

$x^2 - 4x + 19 = 0$

$x = \frac{4 \pm \sqrt{16 - 4(1)(19)}}{2}$

$x = \frac{4 \pm \sqrt{-60}}{2} = \frac{4 \pm \sqrt{4} \sqrt{-15}}{2}$

$\frac{4 \pm 2i\sqrt{15}}{2}$   
 $= 2 \pm i\sqrt{15}$

8.  $18x^2 - 39x + 20 = 0$

$(6x - 5)(3x - 4) = 0$

$6x - 5 = 0$   
+5 +5

$6x = 5$

$x = \frac{5}{6}$

$3x - 4 = 0$   
+4 +4

$3x = 4$

$x = \frac{4}{3}$

Simplify the following expressions:

$$\begin{aligned}
 9. & (1+2i)(3-2i) \\
 & = 3 - 2i + 6i - 4i^2 \quad \leftarrow (-4)(-1) \\
 & = 3 + 4 + 4i \\
 & = \boxed{7 + 4i}
 \end{aligned}$$

$$\begin{aligned}
 11. & \frac{6}{2-i} \cdot \frac{2+i}{2+i} = \frac{12+6i}{4-i^2} \\
 & = \frac{12+6i}{4+1} = \boxed{\frac{12+6i}{5}}
 \end{aligned}$$

$$\begin{aligned}
 10. & \frac{(4+7i)(2+3i)}{(2-3i)(2+3i)} = \frac{8+12i+14i+21i^2}{4-9i^2} \\
 & = \frac{8-21+26i}{4-(9)(-1)} = \frac{-13+26i}{13} \\
 & = \boxed{-1+2i}
 \end{aligned}$$

$$\begin{aligned}
 12. & \frac{2+3i}{3i} \cdot \frac{i}{i} = \frac{2i+3i^2}{3i^2} \\
 & = \frac{2i-3}{-3} = \boxed{\frac{3-2i}{3}}
 \end{aligned}$$

Take the following absolute value inequalities; solve them out, graph them out, write the solutions in interval notation:

13.  $|2x - 5| < 7$

$$\begin{aligned}
 2x-5 < 7 & \quad 2x-5 > -7 \\
 +5 \quad +5 & \quad +5 \quad +5 \\
 \hline
 2x < 12 & \quad 2x > -2 \\
 \frac{2x}{2} < \frac{12}{2} & \quad \frac{2x}{2} > \frac{-2}{2} \\
 x < 6 & \quad x > -1
 \end{aligned}$$

$\boxed{(-1, 6)}$

15.  $|4x - 3| \leq 9$

$$\begin{aligned}
 4x-3 \leq 9 & \quad 4x-3 \geq -9 \\
 +3 \quad +3 & \quad +3 \quad +3 \\
 \hline
 4x \leq 12 & \quad 4x \geq -6 \\
 \frac{4x}{4} \leq \frac{12}{4} & \quad \frac{4x}{4} \geq \frac{-6}{4} \\
 x \leq 3 & \quad x \geq -\frac{3}{2}
 \end{aligned}$$

$\boxed{(-\infty, -\frac{3}{2}] \cup [3, \infty)}$

14.  $|3x + 4| \geq 2$

$$\begin{aligned}
 3x+4 \geq 2 & \quad 3x+4 \leq -2 \\
 -4 \quad -4 & \quad -4 \quad -4 \\
 \hline
 3x \geq -2 & \quad 3x \leq -6 \\
 \frac{3x}{3} \geq \frac{-2}{3} & \quad \frac{3x}{3} \leq \frac{-6}{3} \\
 x \geq -\frac{2}{3} & \quad x \leq -2
 \end{aligned}$$

$\boxed{(-\infty, -2] \cup [-\frac{2}{3}, \infty)}$

16.  $2|3x - 1| - 3 > 5$

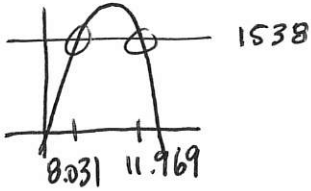
$$\begin{aligned}
 2|3x-1| - 3 & > 5 \\
 +3 \quad +3 & \\
 \hline
 2|3x-1| & > 8 \\
 \frac{2|3x-1|}{2} & > \frac{8}{2} \\
 |3x-1| & > 4 \\
 3x-1 > 4 & \quad 3x-1 < -4 \\
 +1 \quad +1 & \quad +1 \quad +1 \\
 \hline
 3x > 5 & \quad 3x < -3 \\
 \frac{3x}{3} > \frac{5}{3} & \quad \frac{3x}{3} < \frac{-3}{3} \\
 x > \frac{5}{3} & \quad x < -1
 \end{aligned}$$

$\boxed{(-\infty, -1) \cup (\frac{5}{3}, \infty)}$

$$s = -16t^2 + v_0t + s_0$$

17. A projectile is launched straight up from ground level with an initial velocity of 320ft/sec.

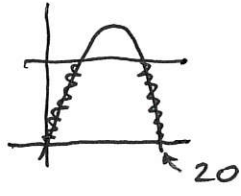
a. When will the projectile's height be 1538 ft. above the ground?



At 8.031 and 11.969 seconds

graph out  $y_1$  and find intersection  $y_2$  2ND TRACE

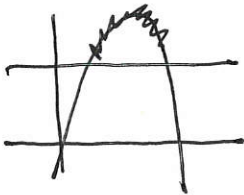
b. When will the projectile's height be at most 1538 ft. above the ground?



At  $(0, 8.031] \cup [11.969, 20)$  seconds

2ND TRACE zero

c. When will the projectile's height above ground be greater than or equal to 1538 ft.?



From  $[8.031, 11.969]$  seconds.

