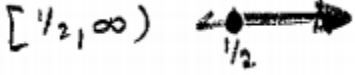
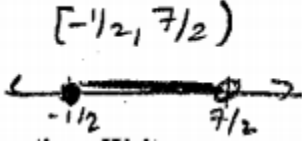
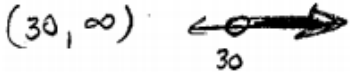


## Calculus Summer Packet Answer Key

1. $\frac{5-a}{a}$	2. $\frac{2x}{5(x+4)}$	3. $\frac{4(x-3)}{5x}$
4. $\frac{x^2 - x - 1}{x^2 + x + 1}$	5. $\frac{x-4}{3x^2 - 4x + 32}$	OMIT PAGE #3
6. 5	7. 17	8. $2t + 3$
9. 7	10. $8m^2 + 40m + 49$	11. 2
12. 1	13. $\frac{\sqrt{3}}{2}$	14. 15
15. $2x + 3$	16. $x^6 - 1$	17. 9
18. -2	19. $\left(\frac{5}{2}, 0\right)$ $(0, -5)$	20. $(-2, 0)$ $(1, 0)$
21. $(-4, 0)$ $(4, 0)$ $(0, 0)$	22. $(-2, 0)$ $(2, 0)$ $(0, 0)$	23. $(3, 5)$
24. $(-1, 5)$	25. $x = -\frac{2}{7}$ and $y = -\frac{13}{7}$	26. SEE ANSWER BELOW

27. 	28. 	29. 
30. D: $(-\infty, \infty)$ R: $[-5, \infty)$	31. D: $[-3, \infty)$ R: $(-\infty, 0]$	32. D: $(-\infty, \infty)$ R: $[-3, 3]$
33. D: $(-\infty, 1) \cup (1, \infty)$ R: $(-\infty, 0) \cup (0, \infty)$	34. $\frac{x-1}{2} = f^{-1}(x)$	35. $f^{-1}(x) = \pm\sqrt{3x}$
36. SEE ANSWER BELOW	37. SEE ANSWER BELOW	38. $y = 3x + 5$
39. $x = 5$	40. $y = 2$	41. $y - 5 = \frac{2}{3}x$
42. $y - 8 = \frac{5}{6}(x - 2)$	43. $Y = 7$	44. $y - 2 = -1(x - 1)$ or $y - 6 = -1(x + 3)$
45. $y = -\frac{3}{2}x + 3$	46. 150, 144, 150.688	47. $\frac{\pi}{4}, -0.297, -4.136$
48. See answer below	49. See answer below	50. See answer below

Answer for problem #26

Solution	Interval Notation	Graph
$-2 < x \leq 4$	$(-2, 4]$	
$-1 \leq x < 7$	$[-1, 7)$	
$x \leq 8$	$(-\infty, 8]$	

Answers for problems 36 and 37.

36.  $f(x) = \frac{x^3}{2}$      $g(x) = \sqrt[3]{2x}$

$$(f \circ g)(x) = \frac{(\sqrt[3]{2x})^3}{2} = \frac{2x}{2} = x$$

$$g \circ f(x) = \sqrt[3]{2 \left( \frac{x^3}{2} \right)} = \sqrt[3]{x^3} = x$$

since  $(f \circ g)(x) = x = (g \circ f)(x)$   
 then  $f(x)$  &  $g(x)$  are

37.  $f(x) = 9 - x^2, x \geq 0$      $g(x) = \sqrt{9-x}$

$$(f \circ g)(x) = 9 - (\sqrt{9-x})^2 = 9 - (9-x) = 9 - 9 + x = x$$

$$(g \circ f)(x) = \sqrt{9 - (9 - x^2)} = \sqrt{9 - 9 + x^2} = \sqrt{x^2} = |x| \Rightarrow x$$

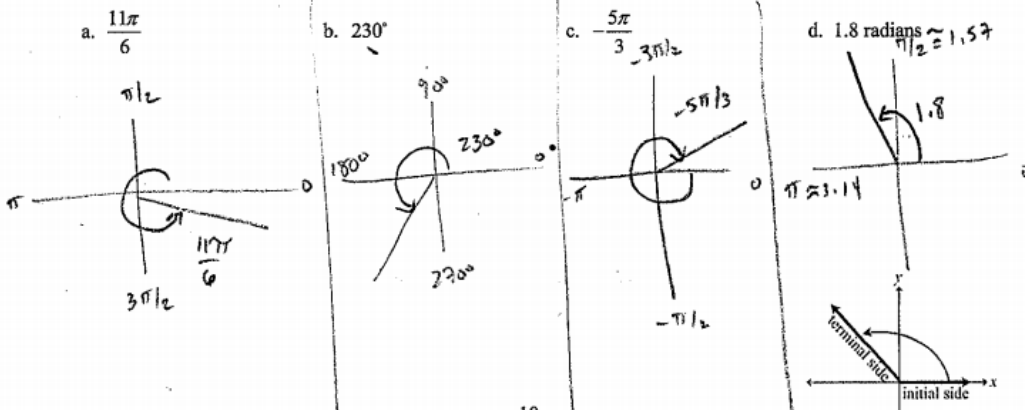
since  $x \geq 0$   
 in  $f(x)$

## Answer for problem 48

### Angles in Standard Position

48. Sketch the angle in standard position.

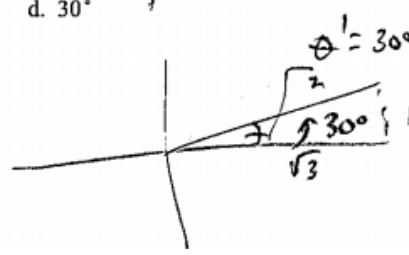
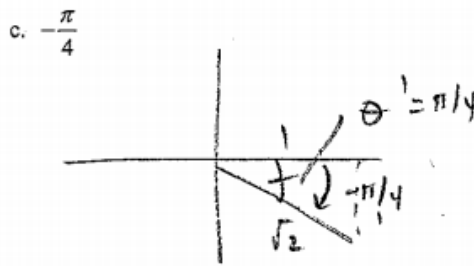
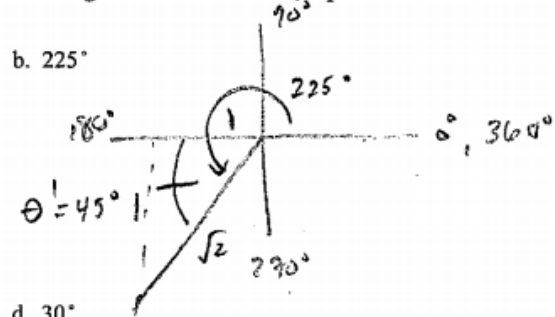
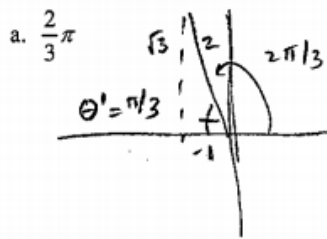
Angle is in standard position if its vertex is located at the origin and one ray is on the positive x-axis (initial side). Other ray is the terminal side. Angle is measured by the amount of rotation from the initial side to the terminal side.



## Answer for problem #49

### Reference Triangles (If you don't remember how to do this, google "reference triangles")

49. Sketch the angle in standard position. Draw the reference triangle and label the sides, if possible.



Answer to problem #50

50. a.)  $\sin \pi = 0$

b.)  $\cos \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$

c.)  $\sin(-\frac{\pi}{2}) = -1$

d.)  $\sin \frac{11\pi}{6} = -\frac{1}{2}$

e.)  $\cos 2\pi = 1$

f.)  $\cos(-\pi) = -1$

