

## Review for the Precalculus Placement Test

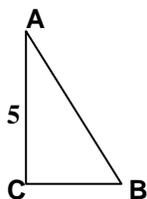
31. Find the radian measure of an angle whose degree measurement is  $330^\circ$ .

32. Which of the following numbers is the smallest?

$$\sin \frac{\pi}{3} \quad \sin \frac{\pi}{4} \quad \sin \frac{\pi}{6} \quad \sin \pi$$

33. In a right triangle ABC, angle C is the right angle, side AC = 5

and  $\sin B = 0.64$ . Find the length of side AB to the nearest tenth.

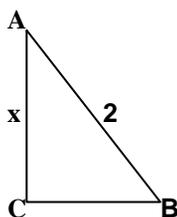


34. Evaluate  $\csc\left(\frac{4\pi}{3}\right)$ .

35. Simplify  $\sin(180^\circ - \theta)$  in terms of  $\sin\theta$  or  $\cos\theta$ .

36. Evaluate  $\sin^2(4\theta) + \cos^2(4\theta)$  for all  $\theta$ .

37. In a right triangle ABC, angle C is the right angle. If side AB = 2 and AC =  $x$ , find an expression for  $\tan B$ .



38. Rewrite the trigonometric identity for  $\sin 2\theta$  and  $\cos 2\theta$  in terms of the angle  $\theta$ .

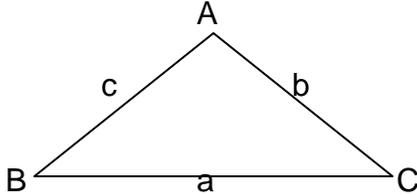
39. Find all solutions of  $x$  in the interval  $0^\circ \leq \theta < 360^\circ$  satisfying the equation  $2\sin^2\theta + \sin^2\theta - 1 = 0$ .

40. For what values of  $\theta$  in the interval  $0 \leq \theta < 2\pi$  is  $\cos 4\theta = 1$ .

41. What is the period of  $y = 4 \sin 3\theta$ .

42. Use the law of cosines given below to find an expression for angle A in triangle ABC if  $AB = 8$ ,  $AC = 4$ , and  $BC = 6$ .

Law of cosines:  $a^2 = b^2 + c^2 - 2bccosA$ .



43. Evaluate  $4Arc \sin\left(\frac{1}{\sqrt{2}}\right)$ .

44. Simplify:  $\cos^2 \theta (\tan \theta)(\csc^2 \theta)$

45. Let  $f(x) = -x^2 + 5$ . Evaluate  $f(1)$ .

46. Find the slope of the line  $3x - 5y = 1$ .

47. Write the equation of the line passing through the point  $(3, -4)$  having

$$\text{slope } -\frac{3}{4}$$

48. A rectangle has vertices  $(7, 7)$ ,  $(10, 7)$ ,  $(7, -2)$  and  $(10, -2)$ . Find the length of the diagonal.



49. If  $f(x) = x^2$ , simplify  $\frac{f(x+a) - f(x)}{a}$

50. Graph  $|x|$  and  $|x+1|$  and  $|x-1|$

51. If  $x = e^{y-2}$ . Solve for  $y$  in terms of  $x$

52. The graph of the parabola  $y = -x^2 + 16x + 1$  is symmetric with respect to what line?

53. If  $f(x) = 9x^2 + 1$  and  $\sqrt{x}$ . Find  $f(g(x))$  and  $g(f(x))$ . Simplify if possible.

54. If  $f(x) = \frac{2x-1}{x^2}$ . For which value(s) of  $x$  is  $f(x) = 1$ ?

55. Find the domain and range of  $y = \sqrt{x^2 - 16}$ .

56. Find the points of intersection of the graphs  $y = 2x^2$  and  $y = 3-5x$ .

57. Simplify  $\log_2\left(\frac{1}{16}\right)$ .

58. Use log rules to simplify  $\ln\left(\frac{\sqrt{x^2+1}}{x}\right)$ .

59. The polynomial  $x(x^2 - 16)(x^2 + 16)$  has how many real roots?

60. Consider  $y = \ln x$ . What is the range and domain? What is the  $x$  intercept?  
Discuss the behavior of the graph as  $x \rightarrow \infty$  and as  $x \rightarrow 0^+$