1. The point given below is on the terminal side of an angle θ. Find the exact value of each of the six trigonometric functions of θ.

   $(24, -7)$

   $\sin \theta = \boxed{}$ (Type an integer or a simplified fraction.)

   $\cos \theta = \boxed{}$ (Type an integer or a simplified fraction.)

   $\tan \theta = \boxed{}$ (Type an integer or a simplified fraction.)

   $\cot \theta = \boxed{}$ (Type an integer or a simplified fraction.)

   $\sec \theta = \boxed{}$ (Type an integer or a simplified fraction.)

   $\csc \theta = \boxed{}$ (Type an integer or a simplified fraction.)

2. Let θ be an angle in standard position. Name the quadrant in which θ lies.

   $\sin \theta > 0, \quad \cot \theta > 0$

   The angle θ lies in which quadrant?

   ○ II

   ○ I

   ○ III

   ○ IV

3. Find two values of θ, $0 \le \theta < 2\pi$, that satisfy the following equation.

   $\cos \theta = \dfrac{\sqrt{2}}{2}$

   $\theta = \boxed{}$

   (Use integers or fractions for any numbers in the expression.)

4.   Solve the logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expressions. Give the exact answer.

$$\log_5(x + 119) + \log_5(x - 5) = 3$$

Select the correct choice below and, if necessary, fill in the answer box to complete your answer.

   ○A. $x = \boxed{}$ (Simplify your answer. Use a comma to separate answers as needed.)

   ○B.   There is no solution.

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5.   Find the exact value of the logarithm without using a calculator.

$$\log_9 81$$
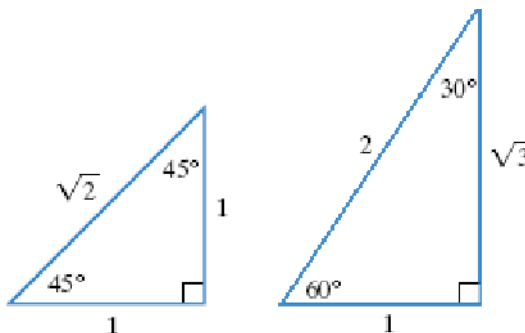
$\log_9 81 = \boxed{}$

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6.   Solve the following exponential equation by expressing each side as a power of the same base and then equating exponents.

$$16^{x+5} = 256^{x-9}$$

$x = \boxed{}$

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7.   Use the given triangles to evaluate the following expression. If necessary, express the value without a square root in the denominator by rationalizing the denominator.

$$\cos 45°$$

$\cos 45° = \boxed{}$

(Simplify your answer. Type an exact answer, using radicals as needed. Use integers or fractions for any numbers in the expression. Rationalize all denominators.)

8. Solve the following logarithmic equation. Be sure to reject any value of x that is not in the domain of the original logarithmic expression. Give the exact answer.

$$\log_2(3x + 7) = 5$$

x = ☐   (Type an integer or a simplified fraction.)

9. Solve the following exponential equation. Express the solution set in terms of natural logarithms. Then use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

$$8^{2x} + 8^x - 30 = 0$$

What is the solution in terms of natural logarithms?

x = ☐

(Type an exact solution, using logarithmic functions as needed.)

10. Solve the following exponential equation by expressing each side as a power of the same base and then equating exponents.

$$125^x = \frac{1}{\sqrt{5}}$$

x = ☐