

4. Simplify: $(\sqrt{15} - 3)(\sqrt{3} + \sqrt{5})$

5. Simplify: $(5 - \sqrt{5})^2 - 30 + 10\sqrt{5}$

6. Simplify, assuming all variables represent positive numbers: $\sqrt{\frac{49a^5b^4}{18c^6}}$

7. Simplify assuming all variables represent positive numbers. The answer should contain only positive integers as exponents.

$$\left(\frac{x^{10}y^{-5}}{z^{\frac{20}{3}}}\right)^{\frac{3}{5}}$$

8. Solve: $x - \sqrt{x - 4} = 10$

9. Solve: $\sqrt{x + 5} - \sqrt{x} = 1$

10. Multiply. Express your answer in the form $a + bi$ where a and b are real numbers.

$$(2 + 5i)(-2 + 3i)$$

11. Divide. Express your answer in the form $a + bi$ where a and b are real numbers.

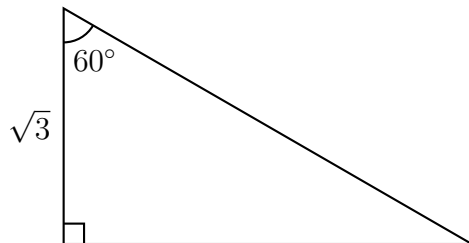
$$\frac{2 - 4i}{1 - i}$$

12. Evaluate $\frac{z^2 + 1 + 2i}{z}$ when $z = 2 - i$. Express your answer in the form $a + bi$ where a and b are real numbers.

13. Simplify: $\frac{x^2 + 2x - 15}{x^2 - 10x + 21}$

14. Divide : $\frac{x^2 - 3x + 2}{x + 3} \div \frac{x^2 - 2x + 1}{x^2 + 5x + 6}$. Simplify the result as much as possible.

15. Find the area of the following triangle. Give an *exact* answer.



16. The angle of depression of a ship observed from the window of a lighthouse 200 ft above the sea level is 5° . How far is the ship?

17. Find the sine, cosine, tangent, and cotangent of 990° . Give *exact* answers.

18. For an angle θ in the third quadrant we have $\tan \theta = \frac{3}{4}$. Find $\sin \theta$.

19. A point P is at distance 4 from the origin $(0, 0)$ and has angle of reference 143.1301° . Find the coordinates of P .

20. Find the angle θ .

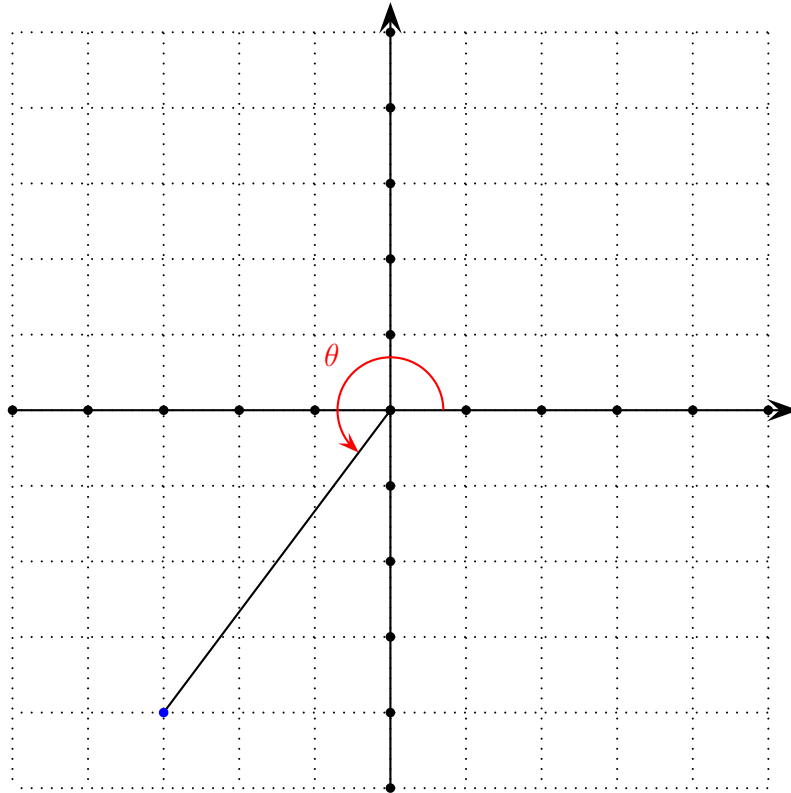


Table of trigonometric values

θ	$\sin \theta$	$\cos \theta$	$\tan \theta$	$\cot \theta$
0°	0	1	0	und
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$
45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$
90°	1	0	und	0