

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

MTH6 Review Sheet III

1. Simplify:

(a) $\sqrt{108}$

(b) $\sqrt{180}$

(c) $\sqrt[3]{40}$

(d) $\sqrt[3]{-64}$

2. Perform the indicated operations and simplify (all variables represent positive real numbers):

(a) $5\sqrt{12} - 4\sqrt{3} + \sqrt{75}$

(b) $(2\sqrt{3})(3\sqrt{5})$

(c) $(4 + \sqrt{2})(5 - 3\sqrt{2})$

(d) $(8 + 2\sqrt{3})^2$

(e) $(1 - 2\sqrt{11})(1 + 2\sqrt{11})$

(f) $\sqrt{\frac{7}{18}}$

(g) $\frac{\sqrt{2}}{\sqrt{5}}$

(h) $\frac{\sqrt{3}}{\sqrt{x}}$

(i) $\frac{\sqrt[3]{2x}}{\sqrt[3]{9x^2}}$

(j) $\frac{1}{2 + \sqrt{3}}$

(k) $\frac{\sqrt{x} - \sqrt{y}}{\sqrt{x} + \sqrt{y}}$

3. Perform the indicated operations and simplify (all variables represent positive real numbers):

(a) $64^{-2/3}$

(b) $\left(\frac{9}{16}\right)^{-1/2}$

(c) $(64x^3y \cdot xy^5)^{4/3}$

(d) $\left(\frac{27x^5y}{8y^3}\right)^{1/3}$

(e) $\left(\frac{8x^{1/4}y^{-3/4}}{x^{-1/2}y^3}\right)^{2/3}$

4. Solve the equation.

(a) $\sqrt{2x+3} - 3 = 0$

(b) $\sqrt{2x+5} = 3\sqrt{x-1}$

(c) $\sqrt{3x+4} - x = 2$

5. Perform the indicated operations of complex numbers and simplify:

(a) i^{173}

(b) $(2 - 3i)(5 - 7i) - (3 - 2i)$

(c) $\frac{4 - 7i}{5 + 3i}$

6. Solve the equation by completing the square.

(a) $x^2 + 6x - 12 = 0$

(b) $x^2 + 4x + 6 = 0$

(c) $2x^2 - 8x = 0$

7. Solve the equation by quadratic formula.

(a) $x^2 - 2x - 6 = 0$

(b) $x^2 - 3x = 0$

(c) $x^2 = 8$

8. Solve the equation by any method.

(a) $2x^2 + 18 = 0$

(b) $x^2 + 4x + 20 = 0$

(c) $4x^2 + 5x - 6 = 0$

(d) $(2x - 3)(x + 4) = 4$

(e) $x^4 - 7x^2 + 12 = 0$

9. Determine the exact value of:

(a) $\cos 60^\circ$

(b) $\csc 45^\circ$

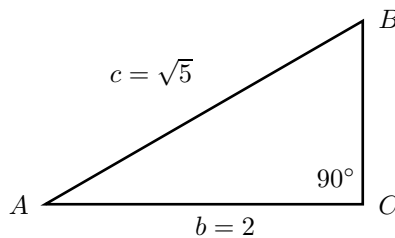
(c) $\sin 30^\circ - \cos 45^\circ$

10. Use the triangle to find:

(a) $\cos A$

(b) $\csc A$

(c) $\tan B$



11. Given that $\triangle ABC$ is a right triangle with $C = 90^\circ$, find the missing sides.

(a) $\cos A = \frac{1}{3}$, $b = 2$

(b) $\tan A = \frac{2}{3}$, $b = 6$

(c) $\cos B = \frac{1}{4}$, $c = 12$

12. The angle of elevation of the top of a tree is 60° from an observation point 80 feet from the base of the tree. Find the height of the tree.

13. Bill is standing on top of a 175 foot cliff overlooking a lake. The measure of the angle of depression to a boat is 30° .

(a) How far, exactly, is the boat from the foot of the cliff?

(b) How far is the boat from Bill?

01/2022 YH, IP