

Do your own work!

1. (5 pts) Use a calculator to approximate $\sqrt{67}$ to three decimal places.
2. (5 pts) Simplify $\frac{\sqrt{189x^5y^6}}{\sqrt{3y^4}}$. Assume that x and y represent *nonnegative* real numbers.
3. (5 pts) Simplify $\sqrt{64x^{12}}$. Assume that x represents *any* real number.
4. (5 pts) Simplify $\sqrt[3]{\frac{x^9}{216y^{12}}}$. Assume that x and y represent any real number.

5. Simplify the expression. Write your final answer using positive exponents.

a. (5 pts) $27^{-\frac{4}{3}}$

b. (5 pts) $\frac{\left(-3x^{\frac{3}{4}}\right)^5}{x^{-\frac{2}{7}}}$

6. (5 pts) Use rational exponents to write $\frac{\sqrt[3]{y^2}}{\sqrt[7]{y}}$ as a single radical expression.

7. (10 pts) Simplify $3\sqrt{32} + 2\sqrt{18}$

8. (10 pts) Rationalize the denominator $\frac{\sqrt{2} - \sqrt{3}}{\sqrt{2} + \sqrt{3}}$

9. (10 pts) Solve $\sqrt{x} - 1 = \sqrt{x - 7}$

10. (10 pts) Simplify and write $\sqrt{-2700}$ in terms of i .

11. Perform the indicated operation. Write the result in the form $a + bi$.

a. (5 pts) $\sqrt{-3}\sqrt{-16}$

b. (10 pts) $\frac{5 + 4i}{2 + 5i}$

12. Find the power of i :

a. (5 pts) i^{21}

b. (5 pts) i^{58}