

Homework 3 - Math 140

Name: _____

Simplify each expression.

1. $x^2(5x^7)$.

2. $(4x^3)^2$.

3. $\frac{(2x)^3}{6x^2}$.

Simplify and rewrite without negative exponents.

4. $\frac{1}{2}(x^{-3})$.

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

6. $\frac{8x^{-5}}{6x^{-3}}$.

Rewrite using negative and/or fractional exponents, so there are no radical symbols.

7. $\frac{3}{\sqrt{x}}$.

8. $x\sqrt[4]{x}$.

9. $\frac{x}{\sqrt[3]{x}}$.

10. A clothing business finds there is a linear relationship between the number of shirts, n , it can sell and the price, p , it can charge per shirt. In particular, historical data shows that 1000 shirts can be sold at a price of \$30, while 3000 shirts can be sold at a price of \$22 . Find a linear equation in the form $p = mn + b$ that gives the price p they can charge for n shirts.

11. How many shirts would the business be able to sell if the price was \$20?

12. If the average cost per shirt is $C = \frac{1}{250}n + 6$, then for what production level n is the price per shirt equal to the average cost?

Solve the systems of equations below.

13.
$$\begin{aligned} 2x - 3y &= 1 \\ 3y - x &= -2 \end{aligned}$$

14.
$$\begin{aligned} x + 3y &= 0 \\ 2x + 4y &= 8 \end{aligned}$$