

LECTURE NOTES: §1.4

1. Use the Laws of Exponents to rewrite and simplify. Write down the rules that you are using to the side of your work.

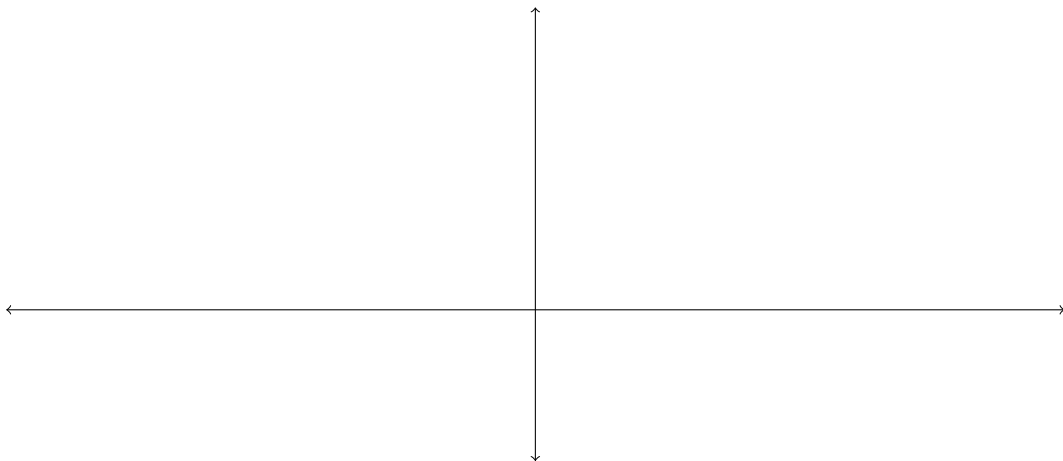
(a) $(25^2)(5^{-3})$

(b) $\sqrt[3]{x^{-2}}$

c. $b^{(n-1)}(3b^2)^n$

d. $\frac{6x^2y}{\sqrt{4xy^3}}$

2. On the axes below, graph $f(x) = 2^x$, $g(x) = e^x$, $h(x) = 10^x$, and $k(x) = \left(\frac{1}{2}\right)^x$. Label any x - and y -intercepts.



3. Assume $a > 0$. What is the domain and range of $f(x) = a^x$? Asymptotes?

4. Sketch the graph of each function below, using what you know about transformations of functions. Determine its domain and range, and label any x - and y -intercepts (use exact numbers) and horizontal or vertical asymptotes.

(a) $f(x) = 1 - 2^x$

(b) $y = 2e^{x-2}$

5. Are the following statements true or false? If either case, explain why. If possible, change the false statements so that they are a true statement.

a. $(a + b)^2 = a^2 + b^2$

b. $\sqrt{x^2 + 4} = x + 2$

c. $\frac{a + b}{c + d} = \frac{a}{c} + \frac{b}{d}$

d. $\frac{a + b}{c} = \frac{a}{c} + \frac{b}{c}$