1. (6pt) Decide if each of the following functions is even, odd, or neither. Be sure to include your work.

(a) \( f(x) = \frac{2^x + 2^{-x}}{3^{-x} - 3^x} \)

\[
\int (-x) = \frac{2^{-x} + 2^{-x}}{3^{-x} - 3^x} = \frac{2^x + 2^{-x}}{3^{-x} - 3^x} = -\left(\frac{2^x + 2^{-x}}{3^{-x} - 3^x}\right) = -f(x)
\]

[Odd]

(b) \( g(t) = (t^3 - t^7)^4 \left(e^{(t^2)} + \frac{1}{t^2}\right)^3 \)

\[
g(-t) = (-t^3 + t^7)^4 \left(e^{-t^2} + \frac{1}{t^2}\right)^3 = (t^3 - t^7)^4 \left(e^{t^2} + \frac{1}{t^2}\right) = q(t)
\]

[Even]

2. (4pt) The graphs of four functions are shown below. Decide if each of them are even, odd, or neither. (You don’t need to explain your answer.) Write your answer close to the appropriate graph and make sure that it is clear which answer corresponds to which graph.

- **Even**
  - \( y = p(x) \)

- **Neither**
  - \( y = r(x) \)

- **Neither**
  - \( y = s(x) \)

- **Odd**
  - \( y = q(x) \)
3. (4pt) Circle either “true” or “false” for each of the following statements. You do not need to justify your answers.
   (a) True or False: \( x^4 \geq x^2 \) for all values of \( x \).
   (b) True or False: The graph of \( y = \ln(x) \) has a horizontal asymptote of \( y = 0 \).
   (c) True or False: The only function which is both even and odd is \( f(x) = 0 \).
   (d) True or False: If \( x \) is any real number then \( (-x)^3 \) must be a negative number.

4. (6pt) Write each of the following sets in interval notation:
   (a) The real numbers, \( x \), which satisfy \(-3 \leq x < 7\).
      \[ [-3, 7) \]
   (b) The real numbers between 11 and 43 excluding both 11 and 43.
      \[ (11, 43) \]
   (c) The real numbers which are greater than or equal to 3.
      \[ [3, \infty) \]
   (d) All real numbers.
      \[ (-\infty, \infty) \]
   (e) The domain of the function \( f(x) = \frac{x}{x-3} \).
      \[ (-\infty, 3) \cup (3, \infty) \]
   (f) The set of real numbers, \( x \), which satisfy \( x^2 - 8x + 15 \geq 0 \).
      \[ x^2 - 8x + 15 \geq 0 \text{ for } x \text{ real} \]
      \[ (-\infty, 3] \cup [5, \infty) \]