Review

Example

1. Suppose I am rolling a loaded die where 1 appears twice as often as the other faces, and all other faces appear equally likely. What is the mean value that I'll roll?

> **Solution:** Suppose that my probability of rolling a 2 is p. Then the probability of rolling $3, 4, 5, 6$ are all p and the probability of rolling 1 is $2p$. Since this is a PDF, the sum of the probabilities must be 1 so $2p + p + p + p + p + p = 7p = 1$ so $p = \frac{1}{7}$. So, the mean is
>
> $$\mu = 2p(1) + p(2) + p(3) + p(4) + p(5) + p(6) = \frac{22}{7}.$$

Problems

2. Graph the functions $1/x^n$ for n even and odd, e^x, e^{-x}, $\ln(x)$, x, x^n for an even number and for an odd number greater than 1, $\arctan(x)$, $\sin(x)$, $\cos(x)$, and e^{-x^2}.