Power vs Expenential Distribution

power law: $y = x^{(\text{constant})}$
exponential: $y = (\text{constant})^x$

1)

As for "looking the same", they're pretty different: Both are positive and go asymptotically to 0, but with, for example $y = (1/2)^x$, the value of y actually cuts in half every time x increases by 1, whereas, with $y = x^{-2}$, notice what happens as x increases from 1 million to 1 million + 1. The amount by which y gets multiplied is barely less than 1, and if you put "billion" in place of "million", then it's even closer to 1. With the exponential function, it always gets multiplied by $1/2$ no matter how big x gets.

Also, notice that with the exponential probability distribution, you have the property of memorylessness.

2)

Fix Me! - Replace image with proper latex markup text....

1)

https://math.stackexchange.com/questions/164436/difference-between-power-law-distribution-and-exponential-decay

2)

Exponential_distribution