Taylor's Theorem Practice

1. Find the fourth degree Taylor polynomial, centered at c = 2 for $f(x) = x \ln x$. Use the Taylor polynomial to approximate $f(2.1)$. Apply Taylor's Theorem to determine the maximum possible error associated with this approximation.

2. Find the fifth degree Taylor polynomial, centered at c = 0 for $f(x) = e^{2x}$. Use the Taylor polynomial to approximate $f(0.75)$. Apply Taylor's Theorem to determine the maximum possible error associated with this approximation.

3. Find the third degree Taylor polynomial, centered at c = 0 for $f(x) = \arctan(x)$. Use the Taylor polynomial to approximate $f(0.4)$. Apply Taylor's Theorem to determine the maximum possible error associated with this approximation.

4. Find the sixth degree Taylor polynomial, centered at c = 1 for $f(x) = \frac{1}{x}$. Use the Taylor polynomial to approximate $f(1.2)$. Apply Taylor's Theorem to determine the maximum possible error associated with this approximation.