

$$2) b) \int \frac{dx}{x(1+4\ln x)^2} = \frac{4}{x(1+4\ln x)^2} dx$$

$$\int \frac{1}{u^2} = -\frac{1}{u} + C$$

$u = 4\ln(x) + 1$
 $\frac{du}{dx} = \frac{4}{x}$
 $dx = \frac{x}{4} du$

> power rule 2 comes out

2 (c)

i)

$$\int f g' = f g - \int f' g$$

$f = \ln(x), g' = 1$
 $f' = \frac{1}{x}, g = x$

ii) $\int_1^e \ln x dx = x \ln(x) - \int 1 dx$
 $\int 1 dx = x$
 $(x \ln(x) - x) + C$

Q3 (a) $\left(\frac{1+i}{1-i}\right)^3 = i^3 = -i$

$i^1 = i$
 $i^2 = -1$
 $i^3 = -i$

(b) $\frac{3}{(1+i)(2+i)}$

(c)

(d)