4. Using the total differential to find the approximate value of the function $z = x^3 y^2$ at point $M(1{,}02; 0{,}97)$:

3. Using the total differential, find the approximate value of the following problem:

$\sqrt{(2.98)^2 + (4.01)^2}$.

1. Compute real and imaginary part of $z = \dfrac{i-4}{2i-3}$.

2. Compute the absolute value and the conjugate of

$$z = (1+i)^6, \qquad w = i^{17}.$$

3. Write in the "algebraic" form $(a+ib)$ the following complex numbers

$$z = i^5 + i + 1, \qquad w = (3+3i)^8.$$

4. Write in the "trigonometric" form ($\rho(\cos\theta + i\sin\theta)$) the following complex numbers

$$a)8 \qquad b)6i \qquad c)\left(\cos\frac{\pi}{3} - i\sin\frac{\pi}{3}\right)^7.$$

5. Simplify

(a) $\dfrac{1+i}{1-i} - (1+2i)(2+2i) + \dfrac{3-i}{1+i}$;

(b) $2i(i-1) + \left(\sqrt{3}+i\right)^3 + (1+i)\overline{(1+i)}$.

6. Compute the square roots of $z = -1 - i$.

$$(3 + 4i)^2 - 2(x - iy) = x + iy$$

$$\left(\frac{1+i}{1-i}\right)^2 + \frac{1}{x+iy} = 1+i$$

$$|z - 1| = 2$$

Find the six solutions of the equation $z^6 + 2z^3 + 2 = 0$.

$$4xy\,dx + (x^2 + 1)\,dy = 0.$$

$$(y + 2)\,dx + y(x + 4)\,dy = 0, \qquad y(-3) = -1.$$

$$\frac{dy}{dx} + 4xy = 8x.$$

$$e^{-\int p(x)dx}\left[\int e^{\int p(x)dx} g(x)dx + c\right]$$

$$\frac{dy}{dx} + 3x^2y = x^2, \qquad y(0) = 2.$$

$$e^{-\int p(x)dx}\left[\int e^{\int p(x)dx} g(x)dx + c\right]$$

$$\frac{dy}{dx} + 3x^2y = x^2, \qquad y(0) = 2.$$

$$(y \sin 2x - \cos x)\, dx + (1 + \sin^2 x)\, dy = 0.$$