

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 $z = \frac{i - 4}{2i - 3}$.

2. Compute the absolute value and the conjugate of

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

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

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

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

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

5. Simplify

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

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

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 $z^6 + 2z^3 + 2 = 0$.

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

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

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

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

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

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

