Answer on Question #55877, Physics / Mechanics | Relativity

Task: The P.E of a system in one dimension is given by U= 5-x+3x^2-2x^3. What is the work done in moving a particle in this potential from x=1 m to x=2m ? What is the force on the particle in this potential at x=1andx=2 m?

Answer:

The work done in moving the particle in this potential from x=1m to x=2m

$$A = U(x=1) - U(x=2) = 5 - 1 + 3 - 2 - 5 + 2 - 12 + 16 = 6J$$

the force on the particle in this potential at x=1and x=2 m :

$$F = -\frac{dU}{dx} = x - 6x + 6x^2$$

$$F(x=1) = 1J$$

$$F(x=2) = 2 - 12 + 24 = 14J$$

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