The standard Normal Distribution of I to W

If X is a nonmal nv with parameters pure and nv then $p(a(x)x)=\int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-u)^2}{262}} dx$.

Then $p(a(x)x)=\int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-u)^2}{262}} dx$.

The normal distribution with panameter exalues rules and 0=1 is called the standard normal distribution.

A DV having a standard nonmal alistribution is called a standard nonmal DV and will be demoted by Z. The pdf of Z is

 $f(z;0,10) = \frac{1}{\sqrt{2\pi}} \cdot e^{\frac{z^2}{2}} \cdot see \cdot e = (s) \oint (a) \int (a) e^{-\frac{z^2}{2}} \cdot see \cdot e = (s) \oint (a) e^{-\frac{z^2}{2}}$

The graph of f(z;0,1) is called the standard normal or $(z)^{2}$ standard normal

(*) The cdf of Z_{z} (5) $P(Z \le Z) = \int_{z}^{z} f(y) \circ f(y) dy$ $= \int_{z}^{z} f(z) \cdot f(y) \circ f(y) dy$

Proposition

standard deviation of with shean mean mande of standard deviation of wither Distribution. Thus, and interior places a standard normal distribution. Thus, of the places of

 $= \Phi(b-\mu) - \Phi(a-\mu)$ $= \Phi(x \le a) = \Phi(a-\mu) \cdot P(x > b) = 1 - \Phi(b-\mu).$

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Q1/ Let Z be a standard notional rev and calculate
               the following probabilies is ve lower nei x 11
             a) P(0 < Z & 2.17) = $(2.17) - $(0)0) 4 NOW.
                                                                                     cheek Appendix Table A.3.
                                                                        = 0.985 - 0.5 = 0.4850.
         0 e) 中(Z兴小37) 中中中(1:37) 中台·1914中山山中的
        and C=1 is called the standard variance ofistation from P=1=0 by P=1=0 (P=1) P=1=0 (P=1) P=1
           20 caipadiatelle = 1 = 100000401= 0.9599; paivad va A
        Defermine the value of the constant en sollies
              a) \phi(c) = 0.9838.
                    · From > Table (A3, $\P(2.14) = 0.9838 (5)}
                                                         => c = 2-14
       (8) The graph of f(2501) is called the standard normal
                  b) B(05Z5c) = 0.291
                                 Φ(c) - Φ(o) = 0-291
                              $\\\ \(\frac{1}{2}\) \(\frac{1}\) \(\frac{1}{2}\) \(\frac{1}{2
                               => c = 0.81 ==
                                                                                                                                                            Mail-15 ado 1
    ay suppose worthe afforce of aging ion an coloumn that I
             helps to support a building isona normally brusts
            distributed 2v X with M= 00 15.0 kips and
            6=1.25 uips. Compute the following propabilities.
             by Standardizing ? (\frac{y_1-y_2}{2}) \hat{P} = (\frac{y_1-y_2}{2}) \hat{P} =
se lected Quertions 28 (a, c, e, f, c) j)
29, 32, 35, 43, 47, 53,57.
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a)
$$P(X \le 15)$$
 standardizing gives.
 $X \le 15$ iff $\frac{X-M}{6} \le \frac{15-15}{1\cdot 25}$
 $\frac{X-15}{1\cdot 25} \le 0$
 $Z \le 0$
 $P(X \le 15) = P(Z \le 0) = \Phi(0)$
 $= 0.5$.

b)
$$P(x > 10)$$

 $x > 10$ iff $\frac{x-15}{1.25} > \frac{10-15}{1.25} = \frac{-5}{1.25}$
 $z > -4$
 $P(x > 10) = P(z > -4)$
 $= 1 - \Phi(-4)$
 $= 1 - 0.0001 = 0.9999$

c)
$$P(14 \le x \le 18)$$
 $14 \le x \le 18$ iff $\frac{x_0 = q_0 x}{1 \cdot 25} \le \frac{14 - 15}{1 \cdot 25} \le \frac{x - 15}{1 \cdot 25} \le \frac{18 - 15}{1 \cdot 25}$
 $-0.8 \le \frac{x - 15}{1 \cdot 25} \le 2.4$
 $P(14 \le x \le 18) = P(-0.8 \le Z \le 2.4)$
 $= \Phi(2.4) - \Phi(-0.8)$
 $= 0.9918 - 0.2119 = 0.7799$