Calculating with the normal distribution

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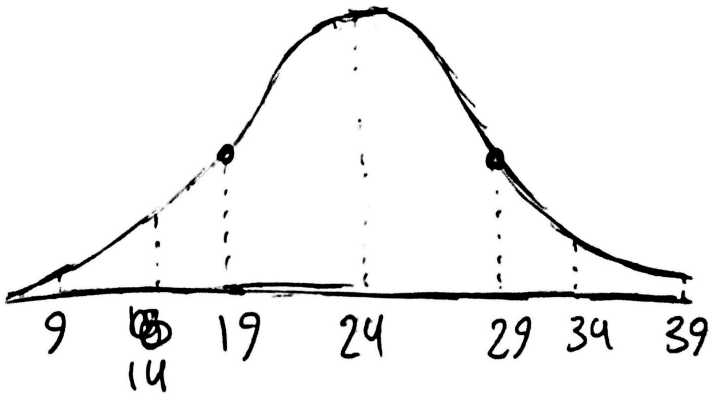
Problem 1

Suppose X has a normal distribution with mean 24 and standard deviation 5.

(a) Sketch the distribution. Label at least 5 points on the x-axis.

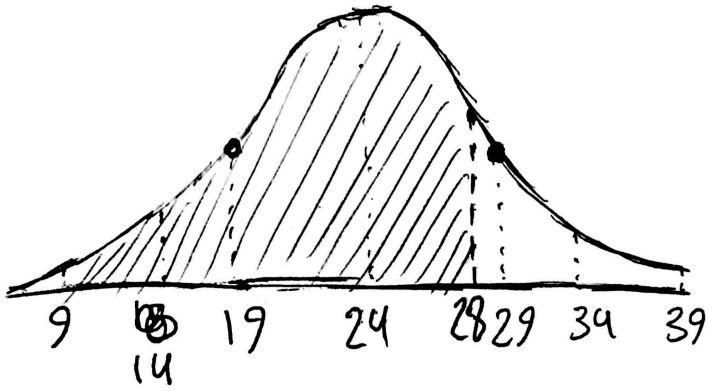


(b) Fill in the blank: $P(24 - 5 < X < 24 + 5) = 68\%$. Use the emperical rule.

(c) Fill in the blank: $P(24 - (5 \times 2) < X < 24 + (5 \times 2)) = 95\%$. Use the emperical rule.

(d) Fill in the blank: $P(24 - (5 \times 3) < X < 24 + (5 \times 3)) = 99.7\%$. Use the emperical rule.

(e) Sketch $P(X \leq 28)$.



(f) Compute P(X 28). Include both R code and a numerical answer.

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pnorm(28,24,5)
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[1] 0.7881446
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(g) Compute P (X > 26). Include both R code and a numerical answer.

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1 - pnorm(26,24,5)
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[1] 0.3445783
```

(h) Compute P (26 X 28). Include both R code and a numerical answer.

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pnorm(28,24,5) - pnorm(26,24,5)
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[1] 0.1327229
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