Class Name
Homework

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1

a) apple

b) apple

c) apple

2

a) apple

b) apple

c) apple

3

a) apple

b) apple

c) apple

4

a) apple

b) apple

c) apple

5

a) apple

b) apple

c) apple

Proof Idea: We have a decidable language A and we want to show $\overline{A}$ is also decidable. If M decides A then we can create a turing machine M' that decides $\overline{A}$ by running M on input w and and outputing the opposite of M.

Proof. Let M decide A
M = "On input string w:

1) Run M on w

   a) **if** M accepts w **then**
      accept
      else *reject*
      end if

□

6 Useful Math symbols

$a^2 + b^2 = c^2$

$$I_D = I_F - I_R \tag{1}$$

$$E = mc^2 \tag{2}$$

$$1 + 1 = 3 \tag{3}$$

$$a^2 + b^2 = c^2 \tag{4}$$

$$a^2 + b^2 = c^2$$

Einstein equation can be found at (2).

... when Einstein introduced his formula

$$e = m \cdot c^2 \tag{5}$$

In equation (5) we have Einstein's equation again.

7 Sum

Now we have some sum stuff
... these sums probably aren't correct:

$$\sum_{i=1}^{n} i = \frac{n * (n+1)}{2} \tag{6}$$

$$\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6} \tag{7}$$

$$\sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6} \tag{8}$$

This is text style: $\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6}$.

$$\sum_{\substack{0<i<n \\ j\subseteq i}}^{n} P(i,j) = Q(i,j) \tag{9}$$

8 Powers

A $d_{e_{e_p}}$ mathematical expression followed by a $h^{i^{g^h}}$ expression. As opposed to a smashed $d_{e_{e_p}}$ expression followed by a $h^{i^{g^h}}$ expression.

If you want to use smash ...
A $d_{e_{e_p}}$ mathematical expression followed by a $h^{i^{g^h}}$ expression. As opposed to a smashed $d_{e_{e_p}}$ expression followed by a $h^{i^{g^h}}$ expression.

9 For all...

$\forall x \in \mathbf{R}: \qquad x^2 \geq 0$

$x^2 \geq 0 \qquad$ for all $x \in \mathbf{R}$

$x^2 \geq 0 \qquad$ for all $x \in \mathbb{R}$

10 Greeks

$$\lambda, \xi, \pi, \theta, \mu, \Phi, \Omega, \Delta$$

11 Exponent, Superscripts, Subscripts

$p_{ij}^3 \qquad m_{\text{Knuth}} \qquad \sum_{k=1}^{3} k$

$a^x + y \neq a^{x+y} \qquad e^{x^2} \neq e^{x2}$

12 Square roots and dots

$\sqrt{x} \Leftrightarrow x^{1/2} \quad \sqrt[3]{2} \quad \sqrt{x^2+\sqrt{y}} \quad \sqrt{[x^2+y^2]}$

$\Psi = v_1 \cdot v_2 \cdot \ldots \qquad n! = 1 \cdot 2 \cdots (n-1) \cdot n$

13 Functions

$f(x) = x^2 \qquad f'(x) = 2x \qquad f''(x) = 2$

$\hat{XY} \quad \widehat{XY} \quad \bar{x_0} \quad \bar{x}_0$

14 Mod

$a \bmod b$
$x \equiv a \pmod{b}$

15 Fractions

In display style:

$$3/8 \qquad \frac{3}{8} \qquad \tfrac{3}{8}$$

In text style: $1\frac{1}{2}$ hours $1\dfrac{1}{2}$ hours

$$\sqrt{\frac{x^2}{k+1}} \qquad x^{\frac{2}{k+1}} \qquad \frac{\partial^2 f}{\partial x^2}$$

16 Arrays, matrices

$$\mathbf{X} = \begin{pmatrix} x_1 & x_2 & \dots \\ x_3 & x_4 & \dots \\ \vdots & \vdots & \ddots \end{pmatrix}$$

$$|x| = \begin{cases} -x & \text{if } x < 0, \\ 0 & \text{if } x = 0, \\ x & \text{if } x > 0. \end{cases}$$

$$\begin{matrix} 1 & 2 \\ 3 & 4 \end{matrix} \qquad \begin{bmatrix} p_{11} & p_{12} & \dots & p_{1n} \\ p_{21} & p_{22} & \dots & p_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ p_{m1} & p_{m2} & \dots & p_{mn} \end{bmatrix}$$

17 Algo Section

Creating nice pseudocode algorithms.

17.1 My Algorithm

Did you learn LaTeX?

if $learned \geq sortof$ **then**
  $okay \leftarrow true$
else
  while $!okay$ **do**
    repeat course
    $okay = learned \geq sortof$
  end while
end if

18 Footnotes

Trying to create footnotes [1] as I learn LaTeX.

[1] This is a footnote.

19 Emphasized words

I'm working on *emphasizing* and adding underlines to all my LaTeX documents.

20 Lists and stuff

1. first list
    - What
    - a
    - cool
    - list.
2. second list
    - Now
    - another
    - one
    - bro

At the centre of
the earth.

21 Conclusion

We can conclude by referencing a bunch of our equations. Below we have $24 * 60 = 1,440$ in equation 10.

$$24 * 60 = 1,440 \tag{10}$$